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# "THE HALL OF FAME FOR TREES"



## THE BATTLE-GROUND OAK

*"Just so, they say, old violins  
Soft echoes long have borne,  
To touch and thrill, and moving skill  
Of masters dead and gone."*

This famous old tree, also known as the "Cornwallis Oak" and the "Liberty Oak," is located only a few hundred yards from where the battle of Guilford Courthouse was fought in 1781, in North Carolina, and tradition has it that during this battle General Green tied his horse to this tree, and that the horse nipped the top out of it, causing the multitude of branches. Aside from its historic interest, this tree is notable for its symmetrical beauty alone. It now has a spread of over one hundred feet and a circumference of twenty-one feet at the base. It has been nominated for the Hall of Fame by Mrs. Dorian H. Blair, of Greensboro, North Carolina; by Mark C. Mills, of Guilford College, and by Mr. Paul Lindley, of Pomona, North Carolina.



# AMERICAN FORESTRY

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## SEEDS OF INTERNATIONAL FRIENDSHIP

By Arthur Newton Pack

European Commissioner of the American Forestry Association

This is the second of a series of articles by Mr. Pack. It tells what was done by Great Britain, France and Belgium with the American tree seed donated to these countries by the American Forestry Association to aid in restoring the forests which were destroyed by the war.—Editor.

Paris, France, September, 1921.

IN considering plans for future world peace it must be recognized that what creates the ability of peoples to understand and appreciate one another and makes for a real "entente cordiale" between nations is only the sum total of many small international courtesies and friendly acts. The gift of tree seeds from the American Forestry Association to the governments of France, Great Britain

while the loss through drought has made it equally necessary for little Belgium to acquire large additional supplies. Nearly every accessible tree-growing country in the world will have to furnish its share: Germany, Austria, Holland, Poland, Serbia, Italy, Corsica, Japan, and last but not least, the United States and Canada. Ours will be a very large portion, and the forestry heads of each of the allied governments are asking whether the American Forestry Association cannot again help in its procurement.

In an area extending southward from the Belgian border near Valenciennes down through the fearful desolation marking the once famous Hindenburg line to Laon and Soissons, occurred as one might expect the greatest devastation and destruction of French forests. It was



AN EXPERIMENTAL NURSERY

Fifteen different species of tree seeds presented by the American Forestry Association are here being tried out in this nursery in Northern France.

and Belgium, made, as it was, shortly after the signing of the Armistice, had this point in view, and its reception and use by these governments illustrates even more clearly the value in which they hold not merely the gift but the spirit which it showed.

Great Britain's present planting program calls for not less than one billion two hundred million tree seeds per annum. France can hardly do with a smaller amount,



ONE OF THE NEW NURSERIES IN NORTHERN FRANCE

The French foresters gladly point out the tiny seedlings of Douglas Fir, which are soon to be transplanted to permanent locations.





#### OUR SEED IN FRANCE

The shipment of American tree seed to France was not received as early as that sent to Great Britain. Hence the difference in height.

quite natural, therefore, that the French government should decide to use our entire gift of twenty-five million seeds for re-afforestation in that region, and it is in the newly constructed tree nurseries here that the French foresters gladly point out the tiny seedlings of American Douglas Fir which are soon to be transplanted to permanent locations. All reconstruction in France goes according to a carefully arranged plan and every site which



#### A BIRD FEEDING STATION IN FRANCE

The wholesale destruction of the forests succeeded in driving out most of the song birds. The New York Bird Society came to the rescue by supplying scores of bird houses and feeding places, which are looked after by the foresters.

will in the future be crowned with a little woodland of American trees, has already been carefully chosen. One cannot fail to appreciate the fine sentiment which actuates the French ministry as expressed in the general order which covered the selection of those sites: "The plantations made from the seed presented to us by the American Forestry Association," says the order, "should be located in places readily accessible to the main travelled roads and if possible on or near well-known sites, with the view that such future forests shall remain as a monument to the partnership of France and America in the Great War."

Next to the defense of Verdun the battles fought over the famous Chemin des Dames were among the bloodiest of the war. So awful was the artillery fire that hardly even a charred stump remains of the once thick forest



#### RECONSTRUCTING A FOREST NEAR THE BELGIAN BORDER

The French forest officer is indicating a spot where a few of the seeds presented by the American Forestry Association have been sown.

along its slopes. This was one of the first sites chosen for a plantation of American Douglas Fir, and it is indeed a particularly appropriate spot; not only to commemorate the part played by our troops in the last of those terrific struggles, but to mark the region supervised by the American Committee for Devastated France, whose splendid work of co-operation with the French government and people still continues as one of the finest examples of American confidence and encouragement. The forest of Saint Gobain, the famous ruins of Coucy-le-Chateau, dynamited by the retreating Germans, and many other places chosen for American tree plantations are hardly of less historical interest, and will be visited by tourists from all over the world.

Farther north there was very little fighting, but the German army cut every stick of available timber for its own use. In the forest of Mormal stand nineteen forest-

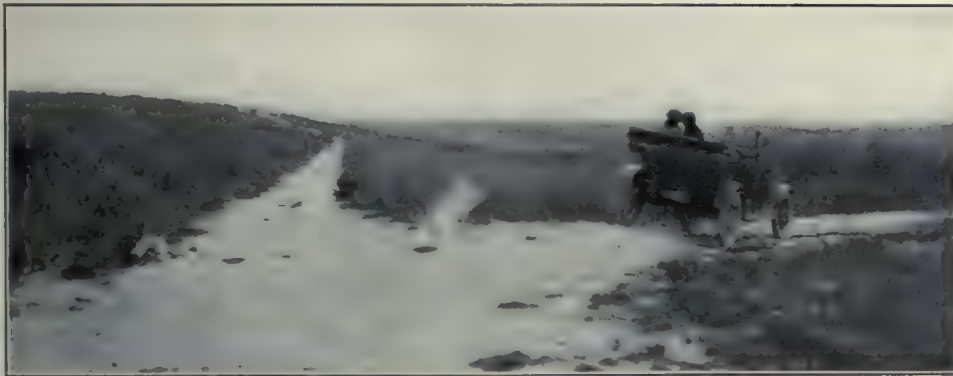


ers' houses. Once upon a time these guarded twenty-five thousand acres of beautiful pine and beech forest, of which nothing remains today except the smaller saplings. Heath and gorse bushes conceal even the carelessly cut German stumps. So vast an undertaking is involved in replanting everywhere at once that here the French have adopted a somewhat different system—clearing and spading up only a little circle here and there wherein our seed has been sown directly without the intermediate nursery stage. The loss may be heavier, but the labor of reforestation should be lightened. This experiment with our seeds is



THE RUINS OF COUCY-LE-CHATEAU

The French government has selected such well known places as this for the plantations of American trees, to the end that these small forests may commemorate the partnership of France and America in the Great War.



THE FAMOUS CHEMIN DES DAMES

The dense forest which once stood here was totally destroyed by shell-fire. Twenty years from now this spot will be crowned with a fine young forest of American Douglas Fir.

of unusual interest to us in America, where planting labor costs are so high, and it may be that an experiment made with American Douglas Fir in France will prove to have real value to forestry in America. The whole northern district, Lille, Valenciennes and Hirsion, is part of the great coal mining and manufacturing center of France which the German army so thoroughly demolished, and because of their location at the door of reviving industry the woodlands here, splashed with patches of American trees, will hold some of the highest commercial value of any forests in the world. No better proof of the importance of re-

foresting our own eastern areas need be sought.

The American Forestry Association does not stand alone in this region as the only contributor to the future welfare of French forests. In a tiny woodland in the Mormal forest somehow neglected by the Germany army, is a sign erected by the New York Bird Society and scores of bird houses and feeding stations testify to the manner in which these other Americans too are



IN THE "ZONE ROUGE"

The French government is confronted with the necessity of reforesting nearly two million acres of land upon which the forests were destroyed by shell fire or cut by the occupying German army.





IN THE NEW FOREST, ENGLAND

Douglas Fir from seed presented by the American Forestry Association is making good progress in these plantations.

striving to sow seeds of international good will.

All of Europe has suffered very severely this summer from the worst drought known in many years. It has not only given a serious setback to the reconstituted agricultural regions but has meant a fearful loss in tree seedlings and young plantations. In this respect Belgium has suffered even more than her neighbors, for of a gift of an equal number of tree seeds which appear to have been planted with no less care and skill, very few seed-



AMERICAN DOUGLAS FIR SEEDLINGS IN IRELAND

The larger portion of the seeds presented to England by the American Forestry Association have been sent to Ireland. The splendid showing here is the result of a planting made in the spring of 1920, the seedlings already having attained an average height of nine inches.

lings remain. Both France and Belgium are greatly pleased with our American Douglas Fir, which with us is found in the greatest abundance on the northern Pacific coast. The first Douglas Fir was introduced on the continent of Europe 25 to 40 years ago. M. Crahay, who has for some years been the very active head of forestry in Belgium, is a great believer in this tree, which because of its rapidity of growth and the commercial value of its wood, he believes will go far to help meet the serious problems of afforestation. The Belgian Ministry of Waters and Forests once boasted of several fine small plantations of Douglas in the Ardennes, but today not a stick remains from the axes of the German army. It is in the beautiful Ardennes Mountains bordering on the



YOUNG DOUGLAS FIR IN EUROPE

The American Douglas Fir was introduced in Continental Europe some 25 to 40 years ago.

old Duchy of Luxembourg that most of the Belgian forests were formerly located, and this is the area which will be replanted with patches of American Douglas mixed with European pine and spruce. The policy of intermingling of kinds and planting in small groups common to both France and Belgium is intended as an assurance against serious loss from insect or other pests which might be particularly likely to attack a foreign species. Also it must be recognized that even if a good



average crop of seedlings from the twenty-five million seeds presented by the Association to each of our former allies were to be planted in a single block, the resulting forest would not be likely to cover in all more than five or six thousand

acres, while France, for example, is confronted with the necessity of reforestation not less than two million acres.

Across the channel in England the use of our seeds is of more than ordinary interest because of its connection with Great Britain's new forest policy. Here again the favorite

American species is the Douglas Fir, although Sitka spruce (the spruce of Alaska and our northern Pacific coast) is much desired. As a moisture loving tree it would seem to be especially suited to the British climate. About a hundred pounds of American seed were allocated by the British Forestry Commission to the interesting work of afforestation along the route of the Caledonian Canal in Scotland. From the point of view of sentiment few better places could have been found than this, since that canal was the route by which a large

number of American submarine chasers were mobilized at will either in the Irish Sea or the North Sea. Almost within sight of one of these future American tree plantations lie today row upon row of these same chasers,

now the property of the British government and awaiting sale or demolition. Douglas Fir is being planted in almost every section of the British Isles, but by far the larger portion of the seeds which came from the American Forestry Association were dispatched by the commission to Ireland. These



A NURSERY IN WINDSOR FOREST

The seed of American Western larch presented to the British government by the American Forestry Association has suffered very much from the drought of the past summer.

were planted in nurseries in County Tyron, about eighteen months ago and have shown a surprisingly rapid growth. It is a fact one of the best nursery showings that may be seen anywhere, and the local foresters may well be proud thereof. This disposition of the seeds was quite without any suggestion from the American Forestry Association and in view of the Irish problem we can only hope that here too their dedication as seeds of good will will bear fruit in helping to establish the desire for broad-minded co-operation and understanding.

## ANNOUNCEMENT OF THE ANNUAL MEETING OF THE AMERICAN FORESTRY ASSOCIATION

The annual meeting of the American Forestry Association will be held in Washington, D. C., on Thursday, January 26, 1922, at 2 P. M., at the New Willard Hotel.

At this meeting the amended by-laws, which are published on Page 39 of this magazine, will

be submitted to the members, and they will be asked to adopt the amendments.

There will be addresses by prominent speakers on forestry topics at the general session in the afternoon, and in the evening there will be speeches and a smoker at the University Club.



# BOTANIC GARDEN AND ARBORETUM FOR THE NATION

By W. R. Mattoon, United States Forest Service

**F**ORESTERS and lovers of trees the country over will be interested in the movement on foot to establish a great national botanic garden and arboretum in the suburbs of Washington. Few botanic gardens exist in the country; the best known are the Arnold Arboretum near Boston, the New York Botanical Garden and the Missouri Botanical Gardens at Saint Louis. The United States Government has no real botanic garden. The present plot of about 12 acres, located on Pennsylvania Avenue just west of the Capitol grounds is used chiefly to produce cut flowers and decorative plants for official use, and attracts little public attention. There is a demand for a real botanic garden where the public may examine

of Plant Industry of the Department of Agriculture needs some means of retaining and growing thousands of plants brought here through the efforts of its agricultural explorers. The Biological Survey of the same Department is interested in a bird refuge which the uplands of the proposed site and some islands in the river will adequately provide.

Professor N. L. Britton points out that botanic gardens are important factors in public education and at the same time places for recreation and enjoyment. They are museums of living plants, arranged and labelled for imparting information direct to the public. Economic features are brought out by food plants, drug plants and fiber



LOOKING EASTWARD ACROSS THE ANACOSTIA RIVER

On the proposed site of the national arboretum are approximately twenty-seven different soil types, and thirty-six native species of forest trees now grow there.

living species of the great variety of trees, shrubs, vines and herbaceous plants native to the District of Columbia or capable of growing there. The plants should be classified and the public given free access to the grounds for recreation and study.

The climate of the District makes possible the growing of a very large number of plant species of the temperate zone. The Forest Service has for several years been interested in securing a location for establishing an exhibit of the trees of this and other countries. The Bureau

plants and the arboretum illustrates the subject of forest products. Many phases of biological relationships, physiological features, and geographical distribution of plants can be studied. The general public, however, taking a real interest in the educational features of botanic gardens, is more interested in landscape effects and in plants from the standpoint of beauty. Woodlands thickets, and meadows appeal to people as attractive places to visit, while developed flower gardens and well-kept public grounds, with a system of paths, carry instruction in the beautification of the home grounds.





CHESTNUT OAK ON THE ROUNDED TOP OF MT. HAMILTON

The climate of this proposed site for a botanic garden and arboretum makes possible the growing of a very large number of plant species and its proximity to the Capitol makes it an ideal location.



RICH AGRICULTURAL LANDS SURROUNDED BY FOREST

These lands offer excellent sites for experimental and propagating gardens. Diversity of natural soil and topographic conditions make this an ideal spot for a national arboretum.



Comparing the United States with other countries in respect to the number of botanic gardens, it is found that Great Britain and its colonies have 65, Germany 35, France and its colonies 25, Italy 23, Russia and Serbia 17, Austria 13 and the United States 12, with all other countries falling below. The first botanic garden was established at Padua, Italy, in 1533 and the second at Pisa in 1544. In France the oldest garden was started at Paris in 1597, and the Oxford garden in England was begun in 1621 with an initial area of 5 acres. The famous Kew Gardens in London have been in process of development since 1760. Largest in the world are the Rio de Janeiro gardens, with an area of some 2,000 acres.

The plan for the development of a great national arboretum and botanic garden at Washington is backed strongly by the National Commission of Fine Arts and various scientific and other bodies. It consists, first, in

Under existing plans for the improvement of Washington, provision is made for an Anacostia River Park as an integral part of the general park system that is being developed. The changes in this plan that would need to be made in order to provide for the Botanic Garden consist essentially in eliminating extensive and very costly filling and reclamation of tidal river flats and in retaining the wild rice lands, partly as a bird refuge and partly for conversion into water gardens along lines that will prove entirely harmonious with the development of the adjacent uplands. If carried out this plan will make possible one of the world's greatest arboreta and botanic gardens. Incidentally, the saving in cost due to the proposed change in the present plan of river improvement has been calculated as sufficient to cover the cost of purchasing the entire Mount Hamilton tract.



NATIONAL ARBORETUM AND BOTANIC GARDENS

Map showing the location of the proposed National botanic gardens and arboretum, including Mount Hamilton and Hickey Hill and lands adjacent to Anacostia River in the Northeast Section of the District of Columbia.

bringing about a radical change in the present approved plan for the improvement of about 400 acres of low-lands owned by the Government lying along the Anacostia River, and secondly in the addition by purchase of a hill known locally as Mount Hamilton together with surrounding lands. The proposed addition has an area of about 367 acres and adjoins the Government land for a distance of some 9,000 feet along the Anacostia River. The entire tract of some 800 acres in turn adjoins other lands under government ownership along the Potomac and Anacostia Rivers, so that approximately 1200 acres of continuous park area will be available.

The site lies in the northeast section and just within the boundary of the District of Columbia, two and one-quarter miles from the Capitol building. From the latter it may now be reached directly over Maryland avenue. The lands, as shown on the accompanying map, including Hickey Hill and the intervening section occupy the central area between Benning and Bladensburg Roads on the south and west, and the Pennsylvania railroad tracks and Anacostia River on the North and east sides, respectively. The tract lies, it may be added, on the main highway line between Baltimore and Washington. The Lincoln Highway could with little difficulty be brought



along the shores of the proposed Anacostia water gardens and thence by way of Maryland Avenue to the Capitol Building, affording an entrance to Washington of unequaled beauty.

Mount Hamilton, a hill of considerable importance in a flat country, rises in one-half mile from the Anacostia River (tidewater) to an altitude of 239 feet. Its elevation above the surrounding country southeastward is nearly 200 feet, and is attained within a distance of one-quarter mile. On the other sides the difference in elevation though less is still striking. It is least along the main Bladensburg Road where the rise is some 140 feet in about one-eighth mile. The location in surrounding land of low altitude gives Mount Hamilton a setting which tends somewhat to exaggerate its elevation and appearance; these are enhanced by the general symmetry of its form. The top consists of a ridge which connects three rounded peaks within about one-quarter of a mile, the summit marking the apexes of a right angle triangle. The ridge consists of shallow soil overlying and containing sandstone conglomerate rock impregnated with iron, which clearly accounts for the topographic formation. The hill is altogether a striking feature in the landscape.

Mount Hamilton is well wooded to the lower slopes, which have partly been cleared for agriculture, though cultivation of much of the cleared land has been abandoned. Altogether about 210 acres of the tract are forested. Thirty-six native species of forest trees have been identified by Dr. Ivan Tidestrom, the botanist. Mixed oaks, with white oak predominating, hickory, black walnut, yellow poplar, black gum, and a few other species compose the slope type, giving away gradually with increasing elevation to chestnut oak, which occurs over the summit in almost pure stand. The tract has been an unmanaged woods largely open to the public and subject to timber trespass and frequent fires. As a result there has been considerable injury and loss of good trees. Yet the canopy strikes one as being practically complete over much of the area, the trees rising to a height of probably 40 to 50 feet near the top and 60 to 80 feet at the

base of the slope. Much of the timber is mature. The topography and forest cover give one the impression of a high oak ridge in the Appalachians—a very agreeable surprise.

A hearing before the joint Congressional Committee on the Library, held on May 21, 1920, resulted in Senator Brandagee, as chairman of the Committee, presenting to the Senate a land acquisition bill providing for the taking over of the Mount Hamilton tract. It had two readings before adjournment but failed of enactment. In the last session Senator Brandagee re-introduced his bill (S. 1560), and Congressman Cooper, of Wisconsin, has placed the matter before the House in a bill (H. R. 6683) which aims at accomplishing the same purpose.

A soil survey made by the Bureau of Soils, presented at the hearing, shows approximately twenty-seven different soil types on the tract proposed for purchase. In this connection one of the Government experts has stated that, with the possible exception of Rio de Janeiro, such a diversity of natural soil and topographic conditions favorable to establishing an extensive botanic garden close to a national capital probably exists nowhere else. Some notable people interested in scientific research and civic improvement were brought together at the hearing. These included Dr. N. L. Britton, Director of the New York Botanic Garden; Dr. David Fairchild, in charge of the office of Foreign Seed and Plant Introduction and Dr. F. V. Coville, Botanist of the Bureau of Plant Industry, United States Department of Agriculture; Col. C. A. Ridley, in charge of the District of Columbia Office of Public Buildings and Grounds; Mr. Frederick L. Olmstead and Mr. James G. Langdon, landscape architects; and Mr. Charles Moore, Chairman of the National Commission of Fine Arts. The finding of the Congressional Committee should be of national interest to scientists and the public at large, for such a garden and arboretum properly equipped and administered affords a wide variety of possibilities in the fields of education and enjoyment of plant life, in turn leading to results of far-reaching importance in the economic life of the Nation.

### PIONEER IN FORESTRY DIES

Through the death of Mr. S. T. Kelsey, at the home of his son Harlan P. Kelsey, on November 5th, forestry in America has lost one of her best and most devoted advocates. Mr. Kelsey was in his 89th year, and through his long and active life his zest for trees and tree planting, and his activities in the interest of forest conservation never abated. He was one of the first to foster forestry in America, doing all that he could to advance its interests in every way, through his writing, attendance at conventions all over the country and through his wide and influential personal acquaintance. In his passing he is recorded as a true pioneer of the profession of forestry in America.

### THE PROSTRATE JUNIPER

Much attention is being paid in American publications to the trees of Greenland; especially to the prostrate juniper.

This tree is indeed prostrate. Its trunk often measures as much as forty feet. But its height? Twenty-four inches! These measurements sound out of all proportion, but it is this very fact which makes this Greenland juniper unique among trees.

Perhaps it was the sight of the juniper in Greenland which suggested to some gardener the unique idea of dwarfing trees, a custom that has been prevalent in Eastern countries for many years and prevails almost unfailingly in the landscaping of formal gardens.



# THE MAPLES

By J. S. Illick

THE Maples are among the best known trees found in the Northern Hemisphere. They are abundant in China and Japan, common in Europe, and widely distributed in North America. There are seventy distinct species of Maples known in the world, of which number thirty-five are native to China and Japan, and thirteen occur in North America.

That Japan is the ancestral home of the Maples is now an accepted belief among botanists. In the Island Empire of the Orient one may find traces of the original maple stock, and some of the most attractive and best bred maple trees now growing upon the face of the earth. To the Maples, the forests of Japan owe much of their variety, beauty and interest. The people of Japan are proud of their Maple trees. For centuries they have been breeding them in order to develop varieties with striking and unique characteristics. Their efforts along this line have been successful, for now the Japanese Maples are famed all over the world for their attractive form, gorgeously colored foliage and delicate leaf textures.

Among the most striking accomplishments of the Japanese in the breeding of the Maple is the development of miniature Maples. These tiny trees are grown in pots and exemplify the highest degree of tree breeding that has yet been attained by man. These miniature trees have been bred and cultivated for centuries. Their leaves show a wide variation in form, color and texture. At a certain season of the year it is a fashion for the Japanese to hold Maple Shows. Many different varieties are exhibited, and the people turn out and view them with interest and award prizes for the best exhibits. The practice is similar to the rose shows in America.

While the Japanese Maples excel in variety and unique-

ness, the American Maples are unrivaled in size and beauty by the Maples of any other part of the world. Of the thirteen Maples native to the United States, nine occur east of the Rocky Mountains, and four are native to the western part of our country.

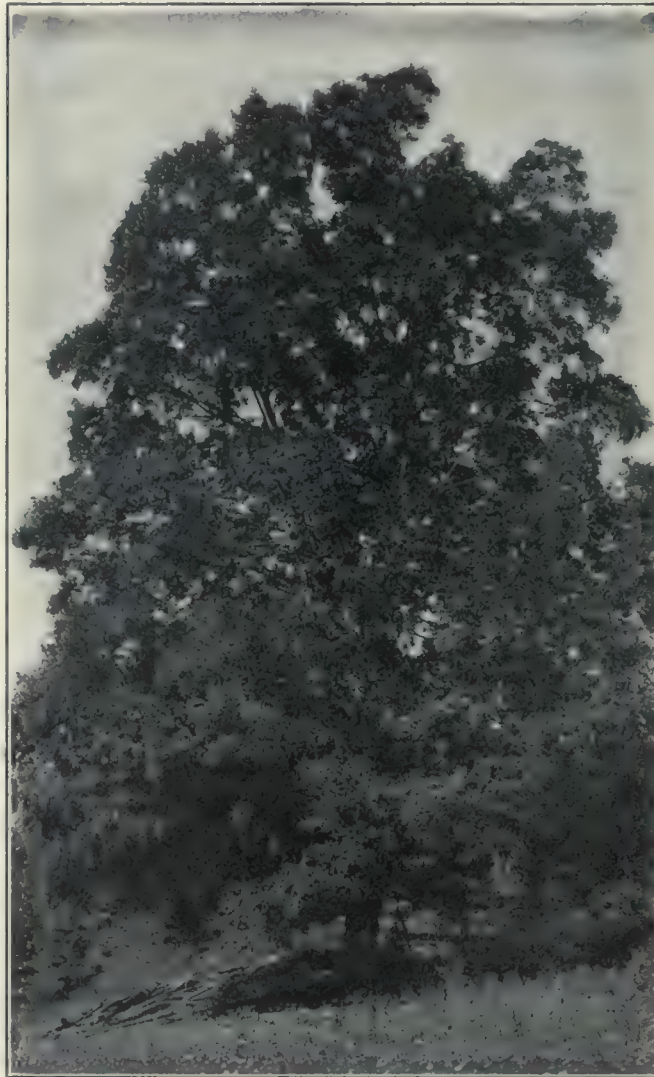
No other group of native trees show a wider variation in their form and structure than do the Maples. Their leaves may be simple or compound, range in size from large to small, and have a smooth or hairy surface.

Their twigs range from slender to stout, and may be green, gray, brown or red in color. Their flowers may occur in small lateral clusters, in long drooping tassels, or in erect spikes, and appear before, with, or after the leaves. The fruit of all the Maples consists of a pair of winged seeds known as a maple key. Each kind of Maple bears a distinctive key which can readily be distinguished from that of all other closely related species.

The Maples occur on a wide range of habitats. The Ash-leaved Maple grows at its best along the banks of streams and ponds or lakes. The Sugar Maple prefers well drained, rich soil, and the Striped Maple is well satisfied in shaded situations and moist places, while the Mountain Maple thrives on dry, rocky hillsides and mountain tops.

The Maples have so many and such striking distinguishing characteristics that it is not difficult to recognize them. There is little chance of confusing them with each other or with other forest trees.

The best way to get acquainted with them is to learn their names. It may be helpful to know not only their common names but also their scientific names, for some of them are very appropriate and may be helpful in fixing their distinguishing characteristics. The common and scientific names of six of our common Maples follow:



A BIG SUGAR MAPLE

The best known of our native hardwoods and a tree entirely devoted to the service of man.



## COMMON NAMES

- (1) Sugar Maple
- (2) Silver Maple
- (3) Red Maple
- (4) Striped Maple
- (5) Mountain Maple
- (6) Ash-leaved Maple; Box Elder.

## SCIENTIFIC NAMES

- Acer saccharum.*  
*Acer saccharinum.*  
*Acer rubrum.*  
*Acer pennsylvanicum.*  
*Acer spicatum.*  
*Acer negundo.*

The Sugar Maple is probably the best known hardwood tree native to North America. All who have visited the North woods know its beauty, stateliness and healthy appearance. Lumbermen all over the northern hardwood forest region are familiar with its value, and the wide range of uses of its wood; and the farmer boy regards this tree as a real friend, for when tapped it produces large quantities of sap, from which the delicious maple sugar and maple syrup are manufactured.

At all seasons of the year this prince of forest trees may be distinguished with little difficulty. The grayish to black bark on old trunks roughened by shallow fissures is distinctive and the slender brown twigs marked with pale dots are positive means of identification. In summer its large, simple and opposite leaves with coarsely toothed lobes and delicate texture are also distinctive.

The fruit of the Sugar Maple does not mature until September. It often persists far into winter, while that of the Red and Silver Maple ripens in early summer. The seeds of Sugar Maple germinate soon after falling to the ground and develop into small seedlings, which often form dense mats upon the forest floor. As many as 50,000 seedlings have been counted by the writer on a single acre of woodland in northern Pennsylvania, and similar pictures can be found in New York, Michigan, Wisconsin and other regions where the Sugar Maple is common.

There is no more positive distinguishing characteristic of the Sugar Maple than its buds. They are brown in color, sharp-pointed, conical and covered with eight to sixteen exposed scales. They are clustered at the ends of the twigs and occur solitary along the side of the twigs. If once recognized they cannot be confused with those of any other tree.

Four of the six Maples native to the eastern United States reach a size sufficiently large to classify them among our important timber trees. They can be distinguished from each other by the characteristics given in the key on the following page.



A ROADSIDE LINED WITH SUGAR MAPLES

The sugar maple is being used in many sections in planting highways and "Roads of Remembrance" and this picture shows how perfectly the tree is adapted to this use.



The wood of the Sugar Maple is well known. It touches our hands and satisfies our wants almost daily. We use it more frequently and in a greater number of ways than any other wood. It may be classified as an all-around wood, for it is used in the manufacture of not less than five hundred distinct articles of commerce. It is one of our chief flooring and furniture woods. Large quantities are also used for broom handles, refrigerators, kitchen cabinets, tooth picks, children's toys, musical instruments and agricultural implements. Most wooden picnic platters and bowling pins are made of Maple wood. It is indeed difficult to think of any common household

article which is not sometimes made from Maple wood.

The Sugar Maple deserves to be protected and propagated for forestry and ornamental purposes. It produces valuable wood, yields delicious syrup and sugar, lives long, furnishes excellent shade, and possesses some of the cleanest and most beautiful features of any American tree.

As a memorial tree the Sugar Maple has few equals, and as an avenue or roadside tree it ranks among the best.

The Silver Maple is also an important timber tree. It is one of the best known of our native Maples, for it has a wide natural distribution and has been planted extensively as a shade and ornamental tree. In summer it is



THREE COMMON NATIVE MAPLES

At the left, ash-leaved maple, in the center, silver leaf maple, and to the right the leaf of the sugar maple.

#### HOW TO RECOGNIZE THE FOUR IMPORTANT NATIVE MAPLES OF THE EAST

NAME	LEAVES	FLOWERS	FRUIT	BUDS	BARK
<u>SUGAR MAPLE.</u>	Simple, usually 5-lobed, coarsely toothed, pale green on lower surface.	Appear with the leaves. Occur in drooping clusters.	Matures in autumn. Medium-sized maple key borne on long stalks and clustered.	Brown, sharp-pointed, with 8 to 16 exposed scales. Occur solitary along twigs.	Grayish brown on twigs, gray to black on main stem, not scaly.
<u>SILVER MAPLE.</u>	Simple, 5-lobed silvery white on lower surface, leaf clefts deep and round based.	Appear before leaves. Occur in dense clusters along twigs.	Matures in early summer. Large maple key with rather divergent wings.	Red, blunt-pointed, clustered along twigs.	Greenish to reddish brown on twigs, dark gray and scaly on main stem.
<u>RED MAPLE.</u>	Simple, 3 to 5-lobed, whitish on lower surface; leaf clefts shallow and sharp-pointed at base.	Appear before leaves. Occur in dense clusters along twigs.	Matures in early summer. Small maple key, arranged in short lateral clusters.	Red, blunt-pointed, clustered along twigs.	Reddish with white dots on twigs, grayish and somewhat scaly on main stems.
<u>ASH - LEAVED MAPLE.</u>	Compound, with 3 to 5 leaflets.	Appear with leaves. Occur in drooping clusters and spikes.	Matures in late summer. Medium-sized maple key with converging wings; arranged in long drooping clusters. May remain on trees over winter.	Short-stalked, blunt-pointed, white wooly; only a few bud-scales visible.	Smooth and purplish green on twigs, grayish brown and furrowed on main stem.





A SUGAR MAPLE TREE WITH A HISTORY

It was planted in 1876 and when 30 years old had a breast-high diameter of 14 inches.

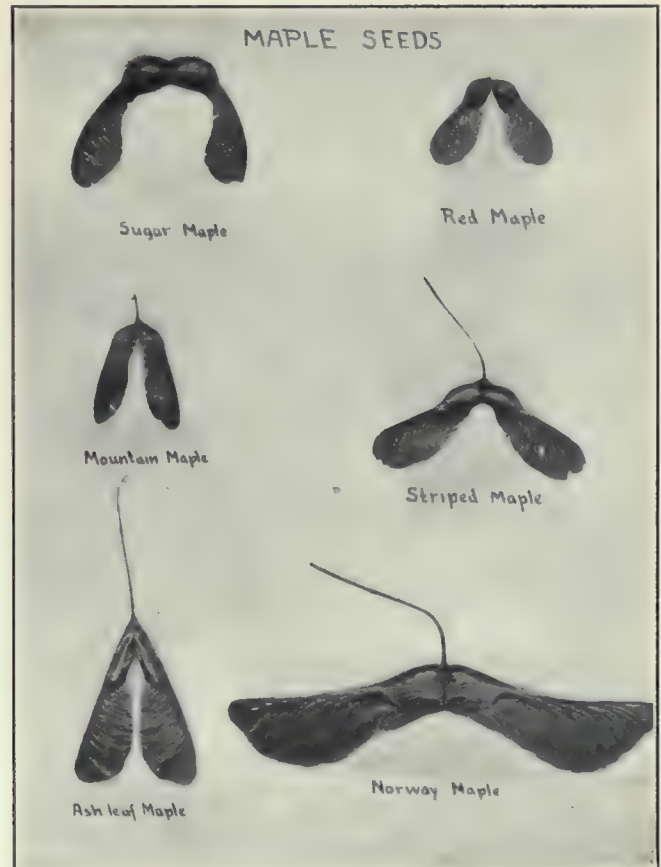
always easily distinguished by the silvery white under surface of the leaves and by the deep clefts in the leaves, the bases of which are round, while those of the Red Maple are sharp-angled. The Silver Maple is usually found along the banks of rivers and other streams. It occurs from New Brunswick and Ontario south to Florida and west to Oklahoma and Dakota. In its wide range it has a number of common names. Among them are White Maple, Soft Maple and River Maple.

The Silver Maple blossoms very early in spring before the leaves have made their appearance. In fact, it is among the earliest of our native trees to blossom. In most localities the flowers appear before those of the Red Maple. The flowers are crowded towards the ends of the branches, each lateral bud containing from three to five blossoms. They range in color from reddish to crimson, and are favorites for the honey bee which swarm about them in great numbers on the first warm days of spring. Its fruit matures early in summer and is larger than that of any of the eastern Maples. The bark is

somewhat furrowed and separates in long scales which are loose at both ends and attached at the middle. This is a helpful distinguishing characteristic at all seasons of the year. The bending down of the branches and the distinct upward swoop of their small ends is also a positive means of identification.

The Silver Maple may attain a large size upon favorable situations. It is not unusual to find a specimen one a hundred feet in height and from three to four feet in diameter. The wood is much softer than that of the Sugar Maple, but is used for a wide range of purposes. It is especially prized in the manufacture of fruit baskets and berry boxes. The wide spreading crown and the drooping branches also recommend this tree for ornamental planting, and a beautiful cut-leaf variety with a weeping habitat has been developed. Before planting it for ornamental purposes one should know that it is short-lived and that its branches are so brittle that they are readily broken off by the wind and by snow and ice pressure.

The Red Maple is ever mindful of its common name. At all seasons of the year some part of it is distinctly red. In winter the beautiful red twigs are marked with conspicuous white lenticles and dotted with clusters of reddish buds. Early in spring, before the leaves have made their appearance the red clusters of flowers appear, and in early summer the red winged fruit is conspicuous and hangs down from the branches on long drooping



FRUIT OF THE MAPLE

With a little study one may soon readily distinguish the maples by their fruit.





A DISTINCTIVE TWIG  
The twig and buds of the Sugar Maple are unmistakable.

stalks. In summer there is often a tinge of red along the veins of the leaves, and in autumn this superb tree is at its best. Just as the leaves of many of our trees are beginning to fall, one may look across a meadow and see a gorgeous Red Maple completely clothed in scarlet, or one may find a solitary specimen on a hillside standing out as a flaming torch among its green associates. It is not only in summer and autumn that the Red Maple is true to its common name and recognized without much effort, for at other seasons of the year it also stands out with an individuality for its stem is gray and stately, and its branches clean and smooth, and its twigs dotted with white lenticles and knotted clusters of distinctly red buds.

Its scientific name is *Acer rubrum*. This name is quite appropriate, for the word "rubrum" means red. Sometimes this tree is called Scarlet Maple because of the scarlet autumnal color of its leaves. Other common names are: Soft Maple, Swamp Maple and White Maple.

If there is one maple that excels all others in beauty in the forest it must be the Red Maple. One usually finds it in wet places. It is commonest in swamps and along river banks, but also thrives in moist soil on mountain slopes. It thrives well when planted along village streets and in parks, but it is short-lived and needs plenty of moisture. These characteristics and requirements suggest that great care should be taken in the selection of



FLOWER AND FRUIT OF THE SILVER MAPLE

The flowers of the Silver Maple occur in clusters along the twigs and appear before the leaves. Its maple-key fruit is the largest of our native maples and the leaves are silvery white on the lower surface, with deep and round-based leaf-clefts.

planting sites for this tree.

The Ash-leaved Maple, also known as Box Elder, differs from all other Maples in that it has compound leaves with three to five leaflets, instead of simple leaves. It also bears the pollen-bearing and seed-producing flowers on separate trees, while the other Maples usually have both kinds of flowers on the same tree. These striking differences were formerly regarded important enough to place this tree in a distinct group by itself, but now it is again grouped with the other simple-leaved Maples.



SUGAR MAPLE FLOWER, FRUIT AND LEAVES

The flowers of the Sugar Maple appear with the leaves and occur in clusters on long, slender stalks. The leaves are large and coarsely toothed.





MOUNTAIN MAPLE FLOWERS AND FRUIT

The flowers of the Mountain Maple occur in erect spikes and its leaves are sharply toothed on the margin and 3 to 5-lobed.

mental tree, being attractive, vigorous and hardy, and practically free from insect and fungous foes.

These two European Maples have few characteristics in common with our American Maples, and may be dis-



LEARN TO KNOW THEM BY THEIR LEAVES

At the left is the leaf of the Norway Maple and at the right that of the Sycamore Maple.

tinguished from each other by the characteristics given in the previous table.

There are now recognized seventy different species of Maples in the world. No other group of trees are better known or have a wider range of uses. As a group they satisfy many human wants by the valuable products which they produce and by the pleasing effects which they make upon the human eye. It would be hard for us to get along without the Maples. They do so much for us. We use them every day in many ways while at work and at play. Their protection and perpetuation is our duty. If we do this task well there will flow forth from it worthy credits to us and needed benefits to thousands yet unborn.



A RED MAPLE GIANT

Many huge old maples are found in the State of Pennsylvania. This one is four feet in diameter and is free of branches for forty feet from the ground.



NAME	FORM AND SIZE	LEAVES	FLOWERS.	FRUIT	BARK	HABITAT
<b>MOUNTAIN MAPLE.</b>	Shrub or small tree, rarely over 15 feet high.	Usually 3-lobed, coarsely toothed, 3-5 inches long, light hairy on lower surface.	Occur in erect spikes, 3 to 4 inches long.	Small maple key about 1-2 of an inch long, arranged in drooping clusters.	On twigs reddish brown to gray; on stem reddish brown dotted with gray blotches.	Prefers rocky situations on mountains.
<b>STRIPED MAPLE.</b>	Small tree, usually 15-30 feet high.	Goose-foot-like, 5-6 inches long, 3-lobed at apex, finely toothed, prominently veined, rusty hairs on lower surface.	Occur in drooping tassels, 3 to 4 inches long.	Small maple key about 3-4 of an inch long, arranged in open drooping clusters.	On twigs reddish; on stem reddish brown streaked with long white lines.	Prefers moist situation in dense woods.

Two European Maples have been widely introduced into the United States. They are the Norway Maple and the Sycamore Maple. Among the shade trees which have been introduced into America from Europe, the Norway Maple easily stands in the first rank. Thousands of specimens are found throughout the Eastern United States. It is difficult to find a single town in which this tree has not been planted. It is a very hardy species, grows rapidly, and is practically insect and



FLOWER AND LEAF OF THE STRIPED MAPLE

The flowers of the Striped Maple occur in drooping tassels and the leaves are goose-foot like.

fungous proof. It satisfies most of the requirements of an ornamental tree, and in spite of the fact that it is a foreigner deserves to be planted extensively as a street and lawn tree. It is attractive from early spring to late in the fall, and during the winter presents a pleasing form and an attractive trunk.

The Sycamore Maple has also been introduced into the Eastern States on a rather extensive scale for shade and ornamental purposes. It has many advantages as a shade and orna-

NAME	BARK	LEAVES	FLOWERS	FRUIT	BUDS
<b>NORWAY MAPLE</b>	Black, fissured, not scaly.	Flexible, large coarsely toothed, almost entire on margin, smooth on lower surface; leaf stalks contain milky sap, resembles sugar maple.	Arranged in yellowish green clusters.	Large maple key with widely divergent wings.	Large and red.
<b>SYCAMORE MAPLE</b>	Brown, not fissured, scaly.	Firm, 3 to 5-lobed, sharply toothed on margin, slightly hairy on lower surface; leaf-stalks do not contain milky sap.	Arranged in erect spikes, about 3 inches long.	Small maple key with almost parallel wings.	Large and green.





BARK OF THE SILVER MAPLE

Shallow furrows and scaliness constitute the main characteristics of the Silver Maple bark.

Perhaps the most attractive feature of the Ash-leaved Maple is found in the rich color of its twigs. They are a glorious olive green, usually covered with a white bloom, and stand out boldly against the sky-line.

This tree is one of the fastest growing and most hardy of our native hardwoods. As a shade and ornamental tree it has the advantages of rapid growth, dense foliage, pleasing color, and comparative freedom from insect and fungous attack. It holds a very prominent place among the shade trees planted in the prairie states. In the older settled portion of the United States it is gradually giving place to other more desirable trees. The chief objection to it is the fact that it is always shedding something, and early in life defects frequently develop. The leaves fall both in and out of season, blossoms litter the ground in spring, and the seeds drop from early winter until spring.

The Ash-leaved Maple is distributed over most of the United States east of the Rocky Mountains. A closely related species is native to California. Recently a number of special varieties with distinctive colored foliage

have been developed. They are now offered by nurserymen for ornamental planting. This tree is worthy of a place in our forests, and deserves being used for ornamental planting, but great care should be taken in choosing suitable sites upon which to plant it. It does not develop satisfactorily upon unfavorable situations.

The two "Tom Thumbs" of the Maples are the Striped Maple and the Mountain Maple. Neither of these trees attain a size sufficiently large to classify them as timber trees, but both of them are so attractive and have such striking distinguishing characteristics that they deserve a place in our forests, and in our ornamental planting program.

The Striped Maple reaches the size of a small tree and loves shaded situations and moist soil, while the Mountain Maple is usually a shrub, and thrives well upon dry rocky hillsides and mountain tops. Both of these small forest trees are satisfied to take their places in the under-story of the forest, while others of their kind reach up high and struggle for a place in the upper-story of the forest. The following table gives the striking distinguishing characteristics of these two beautiful Maples which are common in the northwoods, and extend along the Allegheny Mountains as far south as the Carolinas, Tennessee and Georgia.



RED MAPLE FLOWERS AND FRUIT

The flowers of the Red Maple appear in clusters before the leaves are out. The fruit is a small winged key and the leaves are 3 to 5-lobed, with sharp based clefts.



# THE FOUNDATION FOR FORESTRY IN NEW JERSEY

By C. P. Wilber, State Fire Warden of New Jersey

**I**T is difficult to criticize the woodland owner who is indifferent to the practice of forestry, or even to forest conservation in a community where public opinion and public funds are either one or both indifferent or luke warm to forest fire prevention. Recognition of this fact has grown by leaps and bounds lately, yet, to far too many, fire prevention is still too largely a remote though interesting public problem, instead of a live personal concern, even in the localities where the work is best organized and oldest. To all right-minded, thinking people the national total of damage done by forest fire each year is appalling, the toll exacted by the demon flame in life, in property, in welfare is staggering, but the sense of individual responsibility to guard against their own and others ignorance or carelessness lies dormant while the waste goes on and want draws nearer.

The protection of forests from fire is not the whole of forestry as some timberland owners profess by their practice. But fire protection is the fundamental without which forestry is foolishness. Planting trees for future timber, where fire is likely, is a long-shot gamble. Improvement work in standing timber, not guarded

against fire, is a questionable business venture. Postponement of cutting for bigger and better timber in young merchantable woodlands exposed to fire is hazardous. Reservation of part of the merchantable stand in cutting for reproduction, with no safeguard against serious fire damage, is "bad business" practice. Holding cut-over land for future forest growth is "poor practice" from any business standpoint, unless the fire danger is provided against. These things might do for a faddist or a millionaire or both; but, if cutting timber and selling it were my life work and livelihood, I don't believe I'd do them. Would you?

New Jersey owes a deep debt of gratitude to those who started forestry in the state, for the far-sighted wisdom which built her whole program on adequate, compulsory, state-wide forest fire protection. After more than 15 years under this program it may be of interest and perhaps be instructive to consider what has been done and how and to point out the strength and weaknesses which experience with the system used have shown.

There are two million acres of land now forested or growing up to forest in the state. This is almost half



IT'S SPLENDID TO PUT OUT FOREST FIRES BUT BETTER TO KEEP THEM FROM STARTING

Forest fires in New Jersey are almost invariably man-made and so the State is making strenuous effort to acquaint her citizens with the true conditions and thereby make them more careful.



its total area. A large part of this land is not suitable for agriculture or similar uses. It will grow timber, but always will be waste land otherwise. The part now forested, but fit for other uses should be developed into



FIRE BLACKENED RUINS

Until this sort of thing is stopped it is hard to blame the man who won't improve his woods or take a chance on future timber crops.

farms, pastures, orchards, home sites, etc., but much of such land will be undeveloped long enough to grow one crop of timber if not more. Meanwhile it will lie idle and depreciate unless it does grow forest.

Given the chance, throughout New Jersey nature will retrieve waste land by spontaneous forest reproduction and will maintain a forest cover of valuable species permanently, without artificial planting or other expensive treatment. The retreating sources of virgin supply and the imminence of its exhaustion have emphasized to New Jersey, in common with every Eastern state, not only the wisdom of, but the necessity for home grown timber. Though the vast demands of the densest center of population in the world, within and on New Jersey's borders, can never be wholly met from the state's limited woodland area, yet the state should not and need not import most of the raw forest products used, as it now does, and a unique market awaits her home grown timber. There is practically no barrier between the present low production and the sorely needed and highly profitable maximum but fire. Because of this, as the forestry movement has grown in scope, in public interest and in achievement in New Jersey, its slogan has always remained "Stop Forest Fires."

Granting that fire-proofing the forests is worth while, the obvious necessities are a knowledge of what causes the fires and facilities for remedying these causes and for stopping fires which start. New Jersey has taken up

these problems through a cooperative system of Fire Wardens in the appointment, supervision and maintenance of which both the state and the local municipal governing bodies share the responsibility and expense. A force of five fire wardens is maintained by the state, under the direction of the Forestry Division of its Department of Conservation and Development. These fire wardens have general supervision of all forest fire work either throughout the state or in a large section called a "Division." Their time is given to law enforcement, to direction of fire fighting at the larger fires, to fire preventive work, to oversight of fire lookout and patrol and to general supervision of the work and business of the local fire wardens. Subject to the approval of the State Fire Warden, the townships (or local municipalities) appoint their local fire wardens. This force of local wardens numbering from 350 to 400, now covers 170 town-



NATURE WILL DO HER BEST

Even after a burn; but repeating the dose prevents maturing a crop and makes barren land before long.

ships, towns and boroughs embracing practically the entire forested area of the state. The expense of maintaining this organization and of the actual fire-fighting is paid by the local governing bodies, subject to refund of one-half the cost from the State Treasury after the bills have been paid. Each township (or chief) Fire Warden is paid \$20 per year and his assistants or District Fire Wardens \$10 per year as salary or retainer. All wardens receive \$2 for the first two hours or less at each fire and 50 cents per hour for all time over two hours. These local wardens are the backbone of the fire-fighting system, with authority to compel the use of any equipment necessary and the service of any one for fire-fighting.



Their helpers all are paid \$1 for the first two hours or less and 40c per hour thereafter. This provision for a fixed minimum pay for short service, whether for 10 minutes or two hours, at first blush has the appearance of extravagance. In practice, however, it makes the pay sufficient to encourage men to drop their work and give a fire attention at once while it is still a one-man job of a few minutes. It also has proven the spur to "quick work" by the wardens and their crews, by offering a bonus for "winding up" the work quickly for big pay, instead of working a longer time for less than the prevailing rate of wages in most localities. It therefore has helped to prevent both the damage and expense entailed in long continued fires.

Under this system an average total of 1,000 fires per

slowly by a purely or large "state-owned and operated" system. As the starting point in forest protection this has unquestionably been a real asset.

But, despite real progress in her forest fire campaign, fires of from 500 to thousands of acres in area each are still too common in New Jersey. Periods of severe danger yearly make conditions which the semi-volunteer system cannot adequately handle. Local wardens in their activity are tempted to observe political boundaries which fire does not respect. Local jealousy and pride are common weaknesses. Localities where help is scarce, communication poor and transportation difficult are plentiful. And we are still ignorant of how nearly one-half of our fires start. Therefore, as a state-wide proposition, timber which requires a minimum of from 30 to



#### I DIDN'T MEAN TO—

But this will not undo the damage which external vigilance only will prevent. Fire not only spoils the looks of things but is responsible for the loss of much valuable young timber.

year are dealt with so effectively that more than one-quarter of them never become two-acre fires and over half of them burn less than 10 acres each. With this organization supplemented by the work of the State's wardens, from 50 to 70 per cent of each year's fires are definitely fixed upon the person or agency responsible, a record which has earned for New Jersey an enviable place among the agencies working on the forest protection problem. Also this feature of the work has proven to be a tremendous power as a deterrent and educational factor in preventing fires. The local nature of the organization has aroused a local public interest and support which would certainly have been secured more

50 years to mature, is not yet assured that it can reach maturity, even though it may escape fire damage for the greater part of its growing period. What's the answer? Closer supervision. In the first place by a state-wide fire lookout system, so that fire can't sneak out into the woods and grow up before someone knows that he is in the neighborhood. Second, by enough more state fire wardens to supplement and supervise the local organization so that prompt and well-coordinated attention will be assured to every fire while it is still in short trousers, and so that someone who has the time, as well as the desire, may be on hand to know how all fires start and to know of the remedy, any places or condition which



is a fire menace, before the necessary spark has found it and done its damage.

Unlike some sections of the country, in which natural forces like lightning cause many fires, forest fires in New Jersey are almost invariably man-made. Whether it be the 30 per cent caused by the railroads, or 15 per cent from brush burning and campers' fires, or smokers setting from 15 to 50 per cent, or the small proportion of the total number from many other miscellaneous causes; someone's carelessness, ignorance or indifference is responsible. It is because of this that adequate facilities for watching the woodlands and those who frequent them will certainly stamp out the damage done by forest fire. It is because of this that New Jersey is extremely fortunate in that her schools are all required to teach the lesson of fire prevention, including the how and why of keeping fire from the woods. It is because of this that particular stress has always been laid upon ascertaining who or what started every fire, so that it might be made expensive and uncomfortable to set the woods afire and people thereby be made more careful.

In dealing with a number of the major causes of forest fire, the New Jersey legislation and practice differs from that in many states. From the first it has been recognized in New Jersey's forest protection work, that, as long as coal-burning locomotives were used, the most perfect mechanical devices on the locomotives were but partly effective at best and were always subject to deterioration or careless handling or both. Because of this, the entire matter of locomotive inspection and the discipline of personnel has been left unrestricted in the hands of the railroad companies and the whole forest fire prevention effort has been centered on fire-proofing the rights-of-way, so that not only locomotive sparks, but carelessly discarded matches and smoking materials might not be able to start forest fires. In addition, persistent and apparently successful effort has been made to fix responsibility for all of its fires upon each company and to apply a penalty for each, as in the case of fires from any other cause. Under this policy there have been established permanent "fire lines," so called, along the greater part of the forest trackage in the state, which, where maintained in right condition, provide effective protection save in abnormal danger periods. These lines vary from a cleared zone on which all surface growth and litter are destroyed with a strip of exposed material soil on the outer margin, to a simple burning off of the ground growth and litter frequently enough to keep it clear of inflammable material. They vary in width with surface conditions, with the topography and with the character of the traffic. Also practice has varied from complete clearing of all growth, trees included, to the encouragement of the densest tree shade compatible with a clean ground surface. The best results, however, appear to require a belt of from 100 to 200 feet in width from the nearest rail with a maximum of shade to intercept a falling spark, to discourage vegetation on the ground and to maintain soil moisture. A natural and advantageous outcome of the fire line policy is the interest and activity

of the section crews in stopping fires. If fire prevention is "up to" the section boss, bad locomotive maintenance and operation or no, responsibility is not divided and fire is given the least possible chance to develop. Within the last ten years railroad fires have dropped from over 50 per cent to less than 30 per cent of the total fires started and "big fires" from railroad operations are now extremely rare.

May I see your fire permit? This question has embarrassed great numbers who were using fires for work or pleasure, for New Jersey has from the first required that no open fire be built in or near the woodlands without a written permit from the local fire warden. But, while a nuisance to the experienced camper, an annoy-



LITTLE SURFACE FIRES MAKE TREES LIKE THESE  
And it is a very serious matter in view of the rapidly diminishing stands of virgin timber.

ance to the careful picnicker and sometimes almost a handicap to the trustworthy farmer or settler, this restriction has been of tremendous advantage to the State in keeping fire from the woodlands. It has reduced the needless use of fire, although the permits are issued free and made easily available to all responsible applicants. It has curtailed the careless use of fire because the person whose fire is "tagged" will not take chances, as when his fire is built haphazard and unknown. The foreigner, the new settler, and the inexperienced camper is restrained from doing himself, his neighbors and the community harm by coming into touch with a word of advice and warning before his fire is built. The proven reckless or incompetent can be denied the use of that



which, in his hands, is a public menace. And all burning can be banned in a locality or throughout the state when conditions of peculiar danger make any use of open fire a menace. It is needless to say that, though generally enforced, the strictness of the enforcement has varied with the local situations and different local wardens. But the result of rigid observance of the regulations has always shown emphatically and at once in a reduced number of forest fires. Also the permit law is only operative in townships where there are fire wardens appointed. Because of this the introduction of the warden system into new communities has almost always met with objection, but in no instance of which there is knowledge has the protection which the permit requirement afforded failed, within a short time, to transform the opposition to hearty appreciation of its value.

By other legislation the State can provide against or eliminate serious fire menaces by requiring patrol or remedial measures at the expense of the property owner or of the agent responsible for the condition. In this way threatened trouble from areas of logging slash, unkempt and dangerous roadsides, areas adjoining active steam machinery, improperly protected railroad rights-of-way, permanent camp sites and colonies, etc., is temporarily guarded against or permanently disposed of as the need requires. One other feature of New Jersey's forest fire law deserves particular mention: that is the flexibility of its penalty procedure. Under the law there are provided statutory fines for violation of its provisions, which make responsibility for forest fires, whether by accident or intent, a violation, which compel continual watch over all fires built and require fire permits and fire-fighting service as above described. However, the State is given the power to remit or to reduce the statutory fine, where circumstances justify such action, even though the violation is admitted or

plainly shown. Because of this, there are almost no cases taken into court, and the penalties imposed assume an educational as well as punitive character because the unfortunate but necessary imposition of a severe penalty for a minor offense, if it is to be dealt with at all, which is so common under many penalty procedures, is avoided. A man can tell the truth, point out his ignorance or bad judgment and its result to friends and neighbors and yet not be "strung up" in consequence, if it is reasonable that he should not be.

The annual expenditure for all the work done now averages from \$35,000 to \$45,000, or from 1½ to 2½ cents per acre of forest protected. The variable item is the sum spent for fighting fire, for which the local communities and the State each pay from \$5,000 to \$10,000 per year, dependent on the severity of the fire season. Considering this low cost the State is getting a

surprisingly effective result in fire prevention and control. But a "good showing" or "great improvement" in one year over another in one or many ways has not and will not make forestry practice or woodland ownership attractive or even wise in New Jersey or anywhere. The State can wisely and should raise its annual expenditure for forest fire protection to 4c per acre. At this figure a measure of safety can be



IT "EATS 'EM ALIVE!"

This sort of treatment tends to discourage trees from growing. The young growth is either completely destroyed or stunted and—carelessness causes most forest fires.

assured to woodlands which will eliminate the present risk and take timber growing and timberland holding out of the class of hazardous investment, and make it a safe and profitable business venture.

A statement of the work done and results accomplished in stopping forest fires in New Jersey would be incomplete if it did not give recognition to the great benefit derived from the allotment of Federal Funds, under the so-called Week's Law, for the protection of the watersheds of navigable streams. Though available for use only in the northern third of the State, these funds have

(Continued on page 30)



## TO USE ALASKA'S FORESTS

FOR the first time in our history we have an opportunity, in Alaska, to guide the development of an immense forest region from the standpoint of permanent national interests," declares Col. W. B. Greeley, chief of the Forest Service, United States Department of Agriculture, in his annual report. "This," says the Forester, "does not mean putting the forests of Alaska under lock and key. It means the expansion of her forest industries as rapidly as there is a market for their products, but within the limits and under the control necessary to keep the land productive and make the supply of raw material for manufacture into lumber and paper perpetual.

"In considering ways and means for bettering conditions in the Territory, it is important that we do not lose sight of the bearing of her resources upon the national timber supply. The National Forests of Alaska contain 20,000,000 acres and over 75,000,000,000 feet of timber of a quality suitable for general consumption. This is equivalent to nearly 6 per cent of all the timber in the Continental United States. It includes 100,000,000 cords of pulp wood, whose serviceability for the manufacture of paper is fully established by existing commercial practice. Wisely handled, a paper industry can be developed in Alaska as permanent as the paper industries of Scandinavia, and capable of supplying a third of the present paper consumption of the United States. This is an opportunity which should not be thrown away by inviting unrestrained and destructive exploitation.

"There has been much loose and ignorant criticism of the National Forests of Alaska," continues Col. Greeley, "as imposing bars and locks upon the development of her timber resources. Since these National Forests were placed under administration in 1906 they have been open freely for the use of timber and other commercial resources under regulations of an exceedingly liberal and simple character. They are being cut today to the extent of about 45,000,000 board feet annually. They furnish 86 per cent of all the timber used in the Territory; they supply every sawmill on the Alaskan coast with logs; they furnish a large proportion of the piling, lumber and box shooks used in Alaska's fish industry; they supply the great bulk of the timber used in the mines in their portion of the Territory. Sites have been readily and freely obtained within them for a large number of salmon canneries, sawmills, villages, fox farms, and commercial establishments of every character adapted to this region.

"The Forest Service has labored steadily to promote the establishment of a paper industry in Alaska, which promises to be one of its most important industrial developments. The terms offered to paper manufacturers are, indeed, more flexible and more favorable to the

operator than in the case of any public timberlands in Canada, with whom comparisons have frequently been drawn. Two sales of pulp timber, aggregating 700,000,000 feet, have been made, and there are many pending applications and inquiries from responsible sources. Just as rapidly as bonafide undertakings for the building up of forest industries in the Territory take form, they are receiving and will receive every form of encouragement from the Forest Service consistent with the public interest in maintaining permanent production from Alaska's forests.

"The primary needs of Alaska are transportation, particularly marine transportation, and a decentralized administration of public resources and affairs in the Territory itself," asserts the Chief Forester. "The National Forests of Alaska have always been administered in all respects, except the more important transactions and questions of policy, by supervisors and rangers in the Territory. In recognition of the need for the fullest decentralization, however, a separate National Forest district covering the Territory was created on January 1, 1921, under the direction of a resident District Forester. Ninety-five per cent of the business of these National Forests does not pass beyond Alaska. A further step is desirable. There is need for correlating closely the local administrative activities of the Forest Service with those of other Federal agencies in Alaska and of the Territorial Government for settling currently any questions of overlapping jurisdiction and for securing coordinated action as new developments involving different agencies present themselves. This can be accomplished readily by organizing the chief local administrative officers of the Federal Government, together with the Governor, into an Alaskan council. The existence of such a body could not fail to facilitate the efforts of the Forest Service to make the National Forests in Alaska as beneficial as possible to the people of the Territory."

The Forester points out that in the administration of the National Forests of Alaska the fact must not be overlooked that the Territory is part of the United States, and that its forests are part of our National Forest resources, just as its agricultural problems are related to our national agricultural development and its fish are part of our national food supply.

"There is no more reason," he says, "why a separate and different system should be set up for dealing with the public forests of Alaska than there is for setting up such a system for each State. Alaska needs the application to her forests problems of the experience, technical knowledge and organization provided by the Forest Service; while the policy followed should be at one with that of the entire country, of which Alaska is simply a part."



# HOW SKUNKS DEFEND THEMSELVES

By R. W. Shufeldt,

C. M. Z. S., American Society of Mammalogists, etc.

**A**MONG the peculiarities of the otters, sea otter, skunks, badgers, and their near allies, constituting the North American Mustelidae, there is no one thing that has created the interest that their odoriferous glands have. This is particularly true of the skunks, and the very mention of this animal's name is immediately associated with its power of rendering itself excessively obnoxious or even dangerous to man and to all other animals. We say dangerous, as there have been well-attested cases where complete blindness has followed the injection of the fluid into the eyes, and also dangerous to property, for many things have been utterly ruined by having been defiled in the same manner.

These remarkable structures or glands are present, in



SKUNKS HUNTING IN THE DAYTIME

This unusual picture is from a photograph by Mr. Rollin E. Smith, who presented it to the writer. Skunks are wonderfully agile and elusive in such a situation as here shown, but they are not known to climb trees.

one form or another, in all the true musteline mammals, and through their use these animals possess a means of defense quite equal to the teeth and claws of any of the other small animals. This is the chief use to which these glands and their acrid secretions are put. The idea still prevails among those poorly informed in such matters that this secretion of the glands comes from the kidneys, to be stored in the bladder. Nothing could be further from the truth.

Prudism and false modesty are responsible for the masking of much truth in this world, thus fostering many a danger which is the outcome of ignorance. It is no more indelicate to write about the characters, properties and functions of the remarkable fluid of defense

than to speak about or describe the odor of the skunk cabbage, the namesake of the skunk in the vegetable kingdom.

If the skunk makes a complete discharge, emptying both glands, he is rendered quite harmless, until such a time as the glands become refilled. According to the majority of authorities, the fluid may be thrown by the animal in two distinct streams, spray-like in character, for a distance of eight feet. Upon a calm day or night the odor may be detected over an area of half a square mile, and if carried by the wind, for a distance of more than a mile.

How often the animal is compelled to empty the glands the writer is unable to state—that is, when the creature is not irritated in any way and there is no occasion for it to defend itself. Instances have been known where they have been kept as pets for a year or more, with not a drop of the fluid escaping, or there being the slightest evidence of the animal possessing such a disagreeable organ. If a weasel or a skunk is undergoing any pain, or is suddenly frightened or irritated in any way, they will emit the secretion, when the odor becomes very apparent.



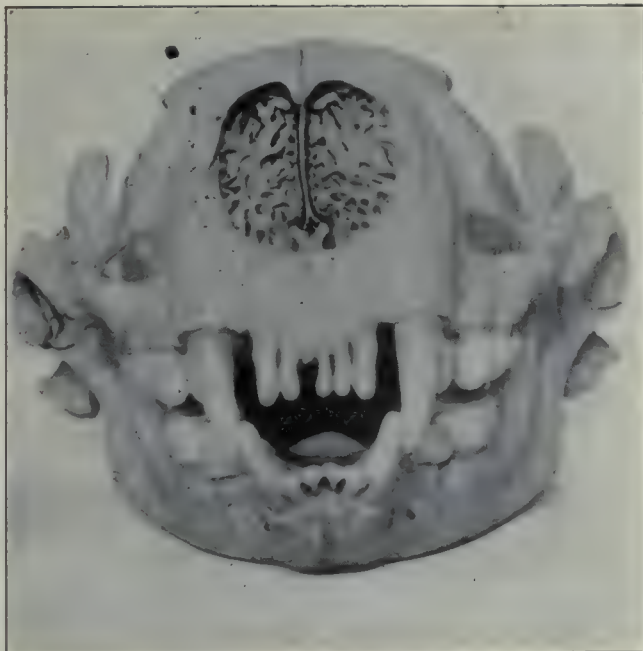
THE NORTHERN SKUNK

This northern form of the skunk tribe typifies the genus as a whole as they occur in the eastern sections of the country. The animal generally holds its tail as here shown, or else perfectly erect. Skunks are not very rapid runners.

The writer is more or less familiar with the glands as they occur in the weasels, sables and the mink, and has dissected them out in the latter animal, but he has never examined the odoriferous glands in the Fisher or Pekan, nor has he ever seen a good account of them anywhere.

In the Marten these glands are small, compared with





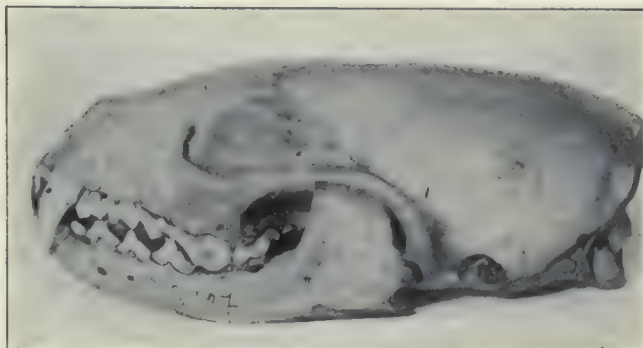
SKULL OF A SEA OTTER

This is the front view of a sea otter skull, a rare animal now, and almost extinct.

what we find in the Skunk. The animal has the power of throwing it only a very limited distance, and often it merely exudes upon the neighboring parts. In fact, it

would seem that it is by no means employed as a fluid of defense, and it is, in some instances, by no means disagreeable and rarely highly offensive. Dogs and other animals do not especially shun the Marten.

In the American sable or pine marten, the gland is not nearly as highly developed as in other mustelines—in



SKULL OF A FISHER

This is a fine specimen of the skull of an adult male fisher. Both of these fine skull specimens are in the collection of the National Museum, at Washington, and are published through the courtesy of the Division of Mammals of that institution. (Photographed by the Author).

the mink, for example; hence the characteristic odor is far less noticeable. In fact, captive martens become quite tame, and the odor given off by them is very mild. It is reduced to a mere musky taint, not altogether unpleasant to man—certainly it offers no protection for them



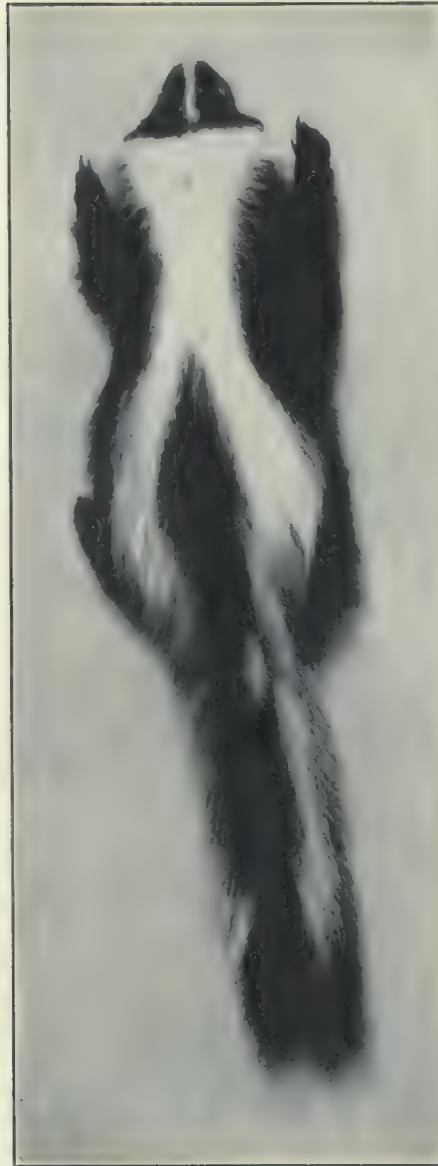
THIS FISHER HAS STALKED A RABBIT

There is a certain character about the drawing of mammals by Mr. Leon L. Pray which is unusual as well as attractive. This one of the Fisher is from a photograph by the writer of a plate in the work of C. B. Cory on "The Mammals of Illinois and Wisconsin." In some parts of the country Fishers are now entirely exterminated.



against their enemies. Passing to the weasels, ermines, sables and the mink, we again find these glands more highly developed, and the odor of their secretion more or less powerful when the animals are excited in any manner, as through fear or anger. The emission of the secretion is voluntary as in the case of the skunk; and, although not as offensive as in that animal, it is nevertheless very penetrating and extremely unpleasant. It is not as lasting as the scent of the skunk, and it is not in the least noticeable when the creatures are at rest and not aroused.

The scent of the secretion of the glands in the case of the mink is especially strong, ranking probably next to that of the skunk in its several characteristics; but to many this odor is entirely different from that of the skunk, and by no means disagreeable; it would not especially deter some from removing the animal alive from a trap or from capturing it by other means. The minks being largely aquatic by nature is another reason why their odor is not as likely to be perceived, as the glands would not be brought into use while the animal was in the water. Coues stated that "it is used with advantage by trappers, to increase the efficacy of their bait. It belongs to the class of musky odors, which, in minute quantities, are not disagreeable to most persons; and, indeed, a moderate amount of mink scent is less undesirable than the rank odor of the she-wolf for instance. The former is special and peculiar; the latter seems to convey all that is bad in the nature of the animal."



SKIN OF A YOUNG SKUNK

This skin of a skunk with broad white markings was collected and prepared by the writer; it was taken many years ago at Fort Fetterman, Wyoming, and is a western species.

With respect to the badgers, little or nothing has been done in the direction of description of the glands as they occur in the species in this country.

For the sake of completeness, we may now devote the remainder of this article to a consideration of these musteline animals—that is, to their habits, distributions and kinds; for, taken in its entirety, the family can hold its own with any other family of mammals in North America in the matter of the interest it has for us, and certainly in its economic importance. As a group of the order Carnivora, it is an unusually well defined one, made up of many species, and being represented in nearly all parts of the world with the exception of the Australian region. The most typical musteline mammals are the martens and weasels, while the other forms making up the family vary to a considerable extent, such as the otters, the skunks, and the badgers.

The belt in which the greatest number are found lies in the Northern Hemisphere, especially in the sub-boreal zone and in the northern girdle of the North Temperate. Typical weasels make up the great bulk of the mustelines, it being the largest genus or the one containing the greatest number of species; moreover, they have the widest geographical distribution. Weasels may be said to typify the family, and zoologists recognize all the way from fifteen to twenty genera as composing it. We have discovered that this family may naturally be di-

vided into quite a number of subfamilies; some of these contain but a single genus, and this genus but a single



WESTERN SKUNKS ARE REALLY BEAUTIFUL ANIMALS

Of the many species of skunks in the United States none is handsomer than the western ones. Some are entirely black, with small white spots on their black bodies; others are marked as here shown, which is from a photograph by the writer of a row of five on exhibition in the Mammal Hall of the United States National Museum.





#### FISHERS ARE FOND OF BEING NEAR WATER

The name of the animal is a misnomer, as it does not catch living fish, but it will eat them when occasion offers. It has been known to kill deer and prey upon rabbits, foxes, porcupines and other mammals.

species. From man's earliest history down to the present time, the economic value of the family has ever been on the increase, and this has only slackened when, through man's agency, the animals giving rise to it have been, to a greater or less degree, destroyed and exterminated. During this rise and decadence, however, simply untold millions of the pelts have been collected, bought, sold, met the demands of fashion, formed food for billions of moths, been worn out, and gradually passed out of existence. To a large extent, this trade and this sequence of



#### OTTERS TYPIFY THE AQUATIC MAMMALS

Our common otter is now becoming very scarce; like its cousin, the mink, it is very fond of fish, and it is extremely expert in catching them. Note the webbed feet of the animal, which is from A. C. Gould's "Where to Find American Game."

things is still going on. The statistics of the sales of the pelts by the Hudson Bay and Canadian companies alone is something stupendous.

No family in the Class Mammalia is better defined than the present one, or more clearly distinguished through its zoological characters in the order Carnivora, to which it belongs. And, notwithstanding the great apparent difference between a badger and a weasel, or a skunk and a sea otter, the comparative anatomy of the group furnishes the best proof of the true relationships of its family members.

As to their place in the system, the writer is of the opinion that the musteline assemblage is, above all others, most closely related to the Bears (*Ursidae*), this



#### FINE PICTURE OF A BADGER

This remarkable photograph of the American Badger was made from life by Mr. Elwin R. Sanborn, and is here used by his permission. Note the median white stripe on the head of the animal, agreeing with what we see in some skunks.

through the family *Eluridae* (the Panda,) and primarily the Racoons. On the other hand, a more remote, though not so very distant a kinship, is seen in the dogs and their various allies.

Upon examining the main and anatomical characters, it would appear that this family is easily divisible into no less than eight subfamilies. Of these eight five are represented in the United States, the martens and weasels (one subfamily); the badgers; the skunks; the American otters, and the sea otters. Nine genera make up these five subfamilies—that is, the otters, the sea otters, three kinds of skunks and three in the marten group—as the minks, weasels and wolverene.

Various fossil forms of these animals have been discovered from time to time. The skunks are strictly of North American distribution, but widely known in other

(Continued on page 41)



## THE RED DRAGON

LEW SARETT

## I

Among the brittle needles of the pine,  
A harmless ember, casually flung—  
Smoldering in the tinder of the soil—  
Writhing crimson vipers  
Redly licking at the leaves,  
Bellying into the amorous wind  
With flickering venomous tongues,  
And sinking blue fangs in the heart of the night.

## II

Lo! blazing mane and streaming bridle,  
Bursting out of the lurid hills,  
A stallion,  
A livid-crimson stallion,  
A lightning-winged stallion,  
Crashing out of the billowing smoke  
On a flaming crimson trail.

A ghastly shriek in the canyon,  
An echoing moan in the pines,  
A wild red rush of flying red feet,  
And a hand at the charger's bit.  
A flame-shod foot in the stirrup,  
A phantom hand on the reins.  
And lo! a rider in scarlet,  
A swaggering rider in scarlet,  
The ghost of a Red Dragoon!

A war-brawling wild cavalier,  
With a cackle sardonic and grim,  
A bite in his wind-whistling arrows,  
And a blight in his lethal breath!—  
Careering he charges the timber  
With resin-hot lances of gold,  
And he shouts a demoniac laughter  
When his blood-bleary eyes behold,  
Scurrying out of the riotous hills  
A rabble of shadowy things,—  
Oh, the clatter of whistling deer,  
The patter of feet in the rushes,  
The bleat of the panting fawn!—  
Flung out of the timber like leaves,  
Like burning leaves in the wind  
Whirled over the hills and the valleys  
And out to the fringes of night.

A bloody-gripped red cavalier!  
A blasphemous dread cavalier!  
Galloping into the blue-templed hills  
With a wild ribald song on his lips,  
And a curse for the gray-bearded pines  
That complain of his searing hot breath;  
Sundering their boles with a swift molten fist,  
Cleaving their suppliant branches,  
With a jeer as they go to a thundering death  
Enshrouded in bellowing flame,  
As they wing their gray souls on the spiralling smoke  
Up to the ultimate stars.  
Galloping over tumultuous clouds  
To tilt at the livid-lipped stars;  
Galloping on through the turbulent sky  
And over the rim of the world.

## III

Oh, the toll of the rider in scarlet!  
The toll of the Red Dragoon!  
Windrows of charred black bones  
Strewn over a gutted land;  
Skeletons,—once draped in the green  
Of leaf and the silken sheen of moss,—  
Bare skeletons, bitter of laughter,  
Clattering through long white nights,—  
Gray ghosts in a land of gray dead dreams,  
Playing the bow of the wind futilely  
Over the once resonant fiddle,  
Striving again to beguile old melodies,  
Bemoaning the old sweet Aprils.  
O, fiddlers, scratching over the shattered box,  
And scraping over the tattered strings,  
Pray, conjure me a tune!—the low call  
Of the last singing bird that is gone!

## FORESTRY IN NEW JERSEY

(Continued from Page 24.)

made possible what state support has not yet been willing to undertake, the beginnings of an adequate fire look-out system and an effective patrol. The fire risk is less in the hardwood forest of the northern hill country than in the pines of the southern sandy coastal plain. But the extreme advantage from every angle which the record shows to North Jersey is not wholly or even mostly due to this, but to the fact that Federal aid has here made more adequate facilities available, than State initiative has granted elsewhere or anywhere in the State.

The New Jersey situation differs in many ways from that in many places. Methods and means required in the wilderness such as for the conditions met in the north woods or on the Pacific Coast are not applicable where steam and electric railroads and good public highways penetrate the forests in every quarter. The treatment required for safeguarding woodlands which are all easily accessible and continually used as the playground of the densest organized population centre in the world, is different from that demanded in the trackless wilderness of the "Big Country." In a section where ignorant, though well intentioned city populations and swarms of new home-makers fresh from foreign shores create the fire problem while at work or play, and where the forest industry is at low ebb because of century long forest abuse and neglect, a different approach is needed than that available where timber spells livelihood to and woodcraft is the primer of a great part of those who frequent the woods. Yet everywhere it is people with whom we must deal, it is public opinion which must prevail against the needless waste by forest fire, and folks must learn to hate and fear the scourge of fire so that their interest and their activity may swallow up the Arch Fiend of the Forest—Fire.

THE production of spruce lumber and pulpwood in Canada in 1919 reached a value of \$72,000,000, the value of the lumber being \$44,000,000 and of the pulpwood \$28,000,000. About one-third of Canadian standing timber is estimated to be of spruce. The amount lost by fire and insects during the last two decades is said to have far exceeded the amount used.

A TON of sandalwood yields an average of 100 pounds of oil.

THE bamboo sometimes grows two feet in 24 hours.

We cannot succeed perfectly but we can and do strive and hope. Our success requires the support of all your public-spirited friends. Nominate them for membership.

There is strength in numbers—the more real Americans we have talking about forestry, the more successful become the activities of your Association. Talk forestry to your friends.



# FOREST RECREATION DEPARTMENT

Arthur H. Carhart, Editor

## Minimum Requirements In Recreation

**D**EATH and Destruction consort with Play in many of our forest recreation areas. They invade Play's realm only because preventative measures against them are not taken. They should be naturally foreign to recreation grounds but inevitably come if the laws of sanitation and fire prevention are disregarded.

Do you walk in the open? Have you auto-camped in rural forest play places? Have you picnicked under leafy shade trees or spicy pines and firs where the outdoor lure calls you to come and linger? If you have I want to talk to you, or if you, or your friends ever expect to vacation in our great forested areas, this message is for you.

Consider the destruction wrought! Fire alone each year destroys \$17,150,000 worth of timber. Money expended in fighting fire in 1920 was more than \$1,000,000. Business yearly suffers to the extent of \$400,000,000!

Good business and common sense demand stoppage of this waste. Fires originating on camping areas constitute a not large portion of the fire loss; every bit of prevention should be brought into play to stop even this portion of the yearly fire toll.

Another phase of this problem is the fact that a camp-

ing spot once burned by fire is never again desirable recreation grounds. As camp spots are often in the most pleasing locations this loss is many times larger than if the same amount of land, not so used, were burned over.

The timber loss plus the aesthetic loss in smoke when a camp ground burns is greater than the price of prevention. Have we in the great majority of cases taken preventative measures on these areas? We have not.

The human life loss is more appalling. Every year deaths occur which might have been prevented with the most elementary sanitary provisions. A very simple spring development costing in the neighborhood of twenty or thirty dollars might save several lives.

Doctors universally testify that the typhoid rate increases appreciably when camping time comes around. It is so common a thing that it is called "vacation typhoid."

In the National Forests of the West the death rate is probably

the highest. Here there are few sanitary installations. No safe water supply is available at many camps and people die from drinking out of open streams that appear crystal pure.



**GOOD CAMPERS**

The campers in this picture have built their own fireplace in a good location. But many who are not versed in outdoor usage will not do so. A built fireplace will direct their firebuilding and perhaps prevent forest fires.





FIGHTING A FIRE

This man with another worker could build about seven small fireplaces a day. One of those fireplaces might prevent such a fire as this.

This annual casualty list cannot be charged to the blindness or inattention of the Forest Service. Effort has been made in making camping places safe. Funds have not been appropriated to carry on this much needed protection program. No one realizes the dangers better than the Forest Service, but without authorization and funds with which to do this work they are helpless.

Statements from Boards of Health show the real menace to life lurking in this lack of sanitation in camping areas. During the past three years there were 331 deaths due to typhoid in the one state of Colorado. There were 79 of these in the city of Denver. Every case reported from Denver was traced directly to some outside infection. None came from the city water or milk supply. Nearly all could be traced to a camping trip in the mountains.

The same ratio of loss will not hold for the entire state, but beside these 331 deaths it is safe to estimate that there are scores of cases contracted by tourists from outside the state that are never reported to the Colorado Board of Health. It is another point to consider that in this list only deaths from typhoid are listed and not the total number of cases. Still another fact is that typhoid statistics given represent only one water born disease. Paratyphoid, dysentery and others yearly take toll

of life or incapacitate. One other report will suffice to illustrate the condition in other western states. The state of Washington reports for the last three years as follows:

	Typhoid	Enteritis	Goltre	Dysentery
1918 . . . . .	102	296	47	0
1919 . . . . .	55	249	41	0
1920 . . . . .	76	502	62	16
1921 . . . . .	16	69	24	0

(Including Month of April)

The bulk of our western mountain playgrounds are in National Forests. Other magnificent areas are in the National Parks. While not all of the typhoid and allied death causes reported to the state Boards of Health can be traced to the use of contaminated water while the patient was on a camping trip in these areas, it is certain that if a check were possible scores of deaths each year would be directly chargeable to

the lack of proper sanitation in these mountain playgrounds. Auto touring is becoming more and more popular. The highway leads to open country and the big timber calls more people each year to the mountain places of the west. With this condition existing there is increasing need of proper preventative measures against fire and disease. With the increase of population in a forest camp comes the increase in menace from these two agencies.



THE FIRE DEMON'S SMOKE BANNER

"Preventative Medicine" is a rational method now advocated. "An ounce of prevention is worth a pound of cure." A fireplace will perhaps be the ounce of preventative medicine to cure the fire ill at some point in our forests.



The life loss is just as preventable as the fire loss. This is the sad feature of reviewing the past. Not only millions of dollars worth of timber and other values have been ruined because of inadequate fire protection in camping areas but millions of dollars worth of lives have been taken also—if you can so value human life.

There are minimum standards which every camp should meet. Without these the camp is unsafe; conversely, with the most simple and practical fire and sanitation measures in operation, the camp is as safe as a residence in the average small town or village.

What are the minimum requirements? And what is their cost? For if the cost for protection is less than the loss only the grossest indifference will prevent the allotting of funds for the purpose of stopping our yearly loss of property and life.

One of the most effective fire prevention agencies is a small fireplace structure. The entire use of an area can be directed by proper placement of this recreation improvement. If the fireplaces exist people will use them if rightly located. By placing them in a perfectly safe yet pleasing place there is no danger of the fire built in them getting away. The very form of such a fireplace will encompass the fire and not allow it to spread.

A guard on a public camping place costs from seventy to one hundred and twenty-five dollars a month. One fireplace costs from three to seven dollars. One fireplace may prevent the forest fire that the guard could never stop.

Six dollar fireplaces have been built on certain of the western forest recreation places. They are used wherever properly placed. In good locations they will almost eliminate the forest fire hazard from a camp ground. They are made of native rock, half a sack of cement and nine steel bars, a half inch thick and sixteen inches long. Two twelve-inch walls rising from a stone and concrete base. These walls are thirty inches long, about six inches thick and twelve inches apart. The steel bars are built into the wall forming a grate about nine inches above the base. Nothing could be more simple or more



NEITHER SANITARY NOR SIGHTLY

Such a spring as this while it is not the old "sunk barrel" type is not a guarantee of pure water. The development may be good for stock on the range but not the best thing for the tourist camper.



SANITARY BUT NOT SIGHTLY

This spring development fulfills the demands of being sanitary. But an addition of a little time and money would have made it attractive also.

serviceable, nor is there any one factor which could do more to prevent campfires spreading.

Consider this as strictly a fire prevention measure. A real service to the camper exists but eliminate that from this reasoning. A fund of \$60,000 would build more than ten thousand fireplaces. If in five years of service they would yearly prevent twelve fires costing a thousand dollars each for suppression and loss they would pay for themselves. This estimate is not unreasonable. Such a fund would go far towards making safe the western camping areas in our National Forests. Equal appropriations for several years would make all western forest camping places reasonably fool fireproof.

The loss of life centers around



water supply. The drinking of stream water is the only alternative offered the camper at thousands of camps in the west. He has no choice about the matter. No other water supply is available.

Two measures are necessary to make and keep the water supply clean. First it is essential to supply properly located and properly constructed sanitariums. Human occupancy demands their presence. Otherwise rains will inevitably wash human excrement into streams used for drinking purposes. Rules or signs cannot stop human body functions, but sanitariums will stop insanitary practices.

While it is reasonable to expect the presence of clean, well-placed sanitariums will prevent contamination of streams, another simple development will make clean water doubly sure. A box which is essentially a miniature filter arrangement built on the principle of city water supply filters should be sunk out of sight in the bed of a stream and water conducted from it to the camp supply point. Water protected from contamination by convenient sanitariums will be doubly safeguarded by passing through a foot or more of sand or charcoal in this arrangement. Any slight contamination will stand little show of passing through this box and to the lips of camp visitors.

Sanitariums can be built at various locations in a satisfactory manner for thirty dollars or less. A maximum cost might be sixty dollars per structure. A thousand would cost a maximum of \$60,000, or a cost equal to the fireplace estimate. A ratio of six to twelve fireplaces to one sanitary has been found good so that a thousand camp units could be constructed in our western forest play places for \$120,000.

Probably a filter box has never been built for service in our western forests. There never has been Federal money available for such life savers, yet they would cost in the neighborhood of only fifteen to twenty-five dollars each. An average of twenty dollars would show that one pure water supply for each group on the "10-1-1" basis would bring the total cost of a thousand camps up

to \$140,000. The "10-1-1" combination is ten fireplaces to one sanitary to one water development.

There are three minimum "prevention" needs. The first is the fireplace, properly built and properly placed. The second is a good sanitary for each group as well built and placed. The third is additional assurance of good water supply through the installation of a filter box.

As compared to the loss from fire each year this total cost is very small. One per cent of the annual fire loss exceeds the entire cost of construction of these permanent improvements.

If we were to place the human lives on a dollar basis this loss alone would justify the spending of \$140,000 on camp development. Insurance companies, public service corporations and like institutions figure the settlement price of a human life at about \$5,000. On this basis \$1,655,000 were lost through typhoid fever in the one state of Colorado during the past three years, no small per cent of this due to insanitary conditions in the mountain areas. Ten per cent of the loss of life in one state during three years reduced to the dollar basis exceeds the entire cost of a thousand camps supplied with "minimum protective requirements."

The recreational use of all forest areas can never be curbed through laws or edicts. No one would wish to do that in our national or state properties. People will come more and more to the outdoor places. They will come in numbers causing congestion at many points. Only through the

installation of proper improvements will these camping places be made safe for human occupancy. Most of our existing forest camp grounds lack proper protective improvements. The cost of each unit or each camp is nominal when compared to the service in protection from fire or life loss.

All rural play areas present these problems of fire prevention and sanitation. A minimum standard must be met in development to make them safe. Any public organization which has charge of such areas should be



BOTH SANITARY AND SIGHTLY

This spring guarantees pure water supply at all times. While it does not show, there is considerable construction work insuring this, but it is all masked by a native stone wall set without cement and in the cracks of which moss and other moisture-loving plants are growing.





A SHELTER AND FIREPLACE

This structure will localize the camping on any grounds and by doing that localize the fires built. By placing it in a proper location the building of fires can be readily regulated.

responsible to the people for loss of property through fire or life through insanitation. They are accessories before the fact when they do not provide for protection in these two fields if able to do so.

The most outstanding case of protective needs lies in the National Forest camps of the west. The Forest Service has this problem to meet. But they cannot solve it without recognition and provision for these needs by Congress. A modest annual appropriation for recre-

ational development for the next few years will save many dollars and lives.

The National Park Service meets the same problem. Here again the need must be recognized and provided



A LOW-COST FIREPLACE

This is not only one of the most serviceable of all camp improvements, but it saves its cost in lowered patrolling expenditures alone.

for. State Forests and Parks, and great rural parks of municipalities have developed the same problems. Park and forest boards of these divisions of government must



DESOLATION

No one would argue the fact that it would be a good investment if one six dollar fireplace would prevent such a disaster as this.



provide in some manner adequate protective features.

The annual loss of fire has been computed. The annual loss from disease is strikingly indicated. Both can be prevented in all rural recreation areas by the installation of the minimum fire and sanitary preventative measures. These are simple. They are properly placed simple open fire-places; well constructed properly located sanitaries, and fool-proof, pure water supplies.

All people who directly or indirectly use the outdoors should insist that public agencies charged with the care of rural recreation areas see that these standards are met. These develop-

ments will not make finished camps for complete camping service, but the public using such camps will be insured against fire loss and that greater loss—deaths from insanitary conditions

Finally, these sinister conditions set forth are not visionary. They exist. A brief survey of the situation will convince the most skeptical that there is need of action. Action, and funds to back it, we must have if the Nation is to go into the out-of-doors secure from fire loss by campfires and life loss

from impure water supply. Let's have decent forest camps for Americans! (Photographs by U. S. Forest Service.)



A DESTROYING FIRE

The cost of one such fire in loss and funds spent in fighting it would build many preventative improvements in many camps. One such camp might eliminate such a fire.

## THE RUSSO-AMERICAN OAK

IN the "Hall of Fame" is the Russo-American Oak planted in the White House grounds April 6, 1904, by President Roosevelt. The relations between this country and Russia have changed somewhat from the time when acorns from the tree at the tomb of George Washington were planted in the grounds of one of the palaces of "His Imperial Majesty, the Emperor of All the Russias." The tree in the White House grounds is still standing, and as far as known the trees in the palace grounds may be but the government of "the emperor of all the Russias" has changed to a great extent. Much history has been written since Charles Sumner, senator from Massachusetts, sent the acorns from the tree at Mt. Vernon to the Czar of Russia. These trees grew and acorns from them were in turn sent back to America and on April 6, 1904 President Roosevelt, Secretary Wilson and Secretary Hitchcock planted this Russo-American oak on the lawn east of the west terrace of the White House. Little did they know that on another April 6, the United States of America would declare war on Imperial Germany, a war in which Russia would be involved and as a result of which "the emperor of all the Russias" would be dethroned and pass into an exile and death around which much mystery has been thrown.

In the files of the army we find the following notation made by E. A. Hitchcock.

"While ambassador at the court of St. Petersburg I made inquiry with respect to the disposition of some acorns that the Hon. Charles Sumner, while United

States Senator from Massachusetts, is said to have sent to His Imperial Majesty the Czar, the acorns having been taken from a massive oak shading the original tomb of Washington at Mt. Vernon.

"These acorns were planted on what is known as 'Czarina Island', which is included in the superb surroundings of one of the palaces of His Imperial Majesty near Peterhof, and there I found a beautiful oak with a tablet at its foot bearing a Russian inscription, the translation of which is as follows:

"The acorn planted here was taken from an oak which shades the tomb of the celebrated and never-to-be-forgotten Washington; is presented to His Imperial Majesty, the Emperor of all the Russias, as a sign of the greatest respect—By an American."

"I was fortunate at the time of my visit, which was in the fall of 1898, in finding a number of acorns on the ground that had been dropped from this historic tree. Gathering a handful, I sent them home, and secured from the seed thus planted a few oak saplings, one of which is here and now planted, with the kind permission of President Roosevelt, in the grounds of the White House, while another is to be planted in a few days nearby its grandparent, which is still in existence at Mount Vernon, both of which young trees, I hope, will reach such age and strength as will, for years to come, typify the continued friendship of the Governments and people, respectively of the United States and Russia, each for the other."



# EDITORIAL

## SHALL THE FOREST SERVICE BE ELIMINATED FROM ALASKA?

THE time has come for plain speaking about the forests of Alaska and the efforts to remove them from the jurisdiction of the Forest Service. Very wisely about 1902, the Government set aside the bulk of the dense spruce and hemlock forests that fringe the coast and cover the islands of south-eastern Alaska. These forests comprise one of the largest bodies of accessible timber in our country. No less than seventy-five billion feet of merchantable timber stand in the Tongass and Chugach National Forests, enough to furnish annually over one billion feet of pulp wood and other material to our industries for all time if the forests are handled under the right methods of forestry.

Under the jurisdiction of the Forest Service these forests have not only served local requirements for lumber, but already two large sales of timber have been made for the manufacture of pulp or paper in Alaska, and there is excellent promise of several additional large sales which will establish new manufacturing enterprises. Just at the time when the Forest Service is succeeding in making the forests a large factor in the building up of this frontier region under conditions which will insure the perpetuation of the forests and thereby the permanence of these new industries, the proposal is made in Congress to cut off the administration of the Alaskan forests from the Forest Service and place them in untried hands in the Interior Department. This proposal is contained in the New Bill, which at the recent hearings before the Senate Committee on Territories was strongly endorsed by the Secretary of the Interior.

The argument advanced in favor of the Bill is that logic requires the consolidation of all federal land matters in Alaska under one Department in order to avoid duplication. In point of fact there is no real duplication at the present time. The Forest Service administers the lands and provides for the use of the resources, and it does this acceptably to the people of Alaska who are directly concerned with the public undertaking. The legal matters pertaining to land titles are handled by the General Land Office whose functions are primarily those of land disposal and titles. The amount of this class of work in the National Forests of Alaska is insignificant compared with the business of administering the land for timber production and other uses. The two lines of work are so distinct that there is no embarrassment from duplication or overlapping. On the other hand, nothing could be more illogical than the proposal to eliminate the Forest Service from Alaska, for it would immediately be necessary to build up in the Interior Department a new forest bureau which would be a dupli-

cation of that already in the Agricultural Department. There would thus be two federal Forest Services handling identical matters and involving the worst sort of duplication of effort and unnecessary large overhead costs. The change would be fraught with grave danger to the public interests, for the forests would be taken from a bureau that has carried the work for over fifteen years, has established a competent and efficient decentralized organization, has developed sound and workable policies, and has the confidence of the country at large. The forests would now be taken from this competent organization and placed in the hands of a Department which must build up a similar bureau to administer them. Inevitably the proposed action would result in changes of policy as well as in duplication of effort. Two government policies in forestry certainly would lead to conflict and public injury. The next step naturally would be to transfer the entire Forest Service from the Department of Agriculture to the Interior Department. This was shown in the editorial appearing in the October number of *American Forestry* to be a step of great danger to the National Forest enterprise and to the whole movement of forestry in the country.

For many years efforts have been made to break down the National Forests of Alaska. At one time it was the frank proposal to abolish these Forests and to throw open the lands to the old system which in the 19th century was accompanied by so much fraud and scandal. Later the proposal was to abolish the Chugach Forest alone. Then came the proposal to have all federal matters in Alaska, including the National Forests, handled by a politically-appointed and substantially irresponsible commission. Now comes the proposal to eliminate the Forest Service from Alaska and to place the work, which is being so efficiently done, under another Department. It is unnecessary to draw any inferences regarding the purpose of the present move. The fact of importance is that the effect would be to lose to the public the great value of the National Forest system that is operating so well in the west and in Alaska itself.

The effect of this move on the National Forest system may easily be conceived. It would jeopardize the whole enterprise which has been built up during the past fifteen years or more and is serving in so many ways the public interests. The welfare of the public, in our opinion, demands that the Alaskan National Forests remain under the jurisdiction of the Forest Service in the Department of Agriculture, and we urge the vigorous support of this principle on the part of our readers and of the country at large.



## NEWSPAPERS ENCOURAGE FORESTRY

**S**ERVICE has become the big word in many newspaper editorial rooms throughout the country and the American Forestry Association, at the opening of a new year, wants to be the first to extend congratulations to the people of those states in whose service so many newspapers have enlisted. Many examples come to the Association of a feature of this service which means the forwarding of the importance of forestry in the minds of the readers. Forest products are the backbone of all business. It is the furthering of this thought that has become the cornerstone of the service.

The Milwaukee Journal for example is doing a real work for the state of Wisconsin. The Journal sends a bulletin sheet to every newspaper in Wisconsin every week. This bulletin sheet puts before the papers information about the campaign for forestry and other conservation measures in their state. The bulletin is now demanded by chambers of commerce, civic clubs and women's organizations throughout the state.

The Chicago Tribune makes a big feature of forestry matters and is carrying on an educational campaign day by day for forestry and for the planting of memorial trees.

The Courier Journal of Louisville has long raised its voice for the things for which the American Forestry Association stands.

The Democrat-Chronicle of Rochester, The New York Evening Mail, the Boston Transcript, the New York Times, the Trenton, N. J. Times—but space forbids anything like a newspaper directory, so we can but mention here and there the leaders in the service of the state. One

conspicuous example is the Pittsburg Post, another is the Detroit News which has sent out a quiz sheet to ascertain just what people think should be done about forestry. The Grand Rapids Herald tells how a trade extension tour brought to the attention of Grand Rapids business men the miles upon miles of unproductive forest land in the state.

The St. Clair Republican says we have heard about forests "since Hector was a pup" but are "we going to continue to crucify the press of the United States upon the cross of paper package goods and go back to the hammer and stone chisel for education?" Added to this the Sault Ste. Marie News says "Mr. Pack speaks truly when he says idle land in this country must be put to work and the quicker the voice of the people is heard in this connection the better for all concerned." The Bay City Tribune takes the view that "the present generation will not see it but the next will, that is the exhaustion of the standing timber of the United States. Lumber will be a luxury in the next generation."

In quoting the New York Financial Chronicle, the Tawas City Herald points out that "the gospel of forestry and reforestation is not a matter of times and seasons; it is for all times and all seasons." Such views from a state where they know what they are talking about certainly call for action such as the Association is campaigning for.

So it goes all along the line. As never before the newspapers are cooperating with the American Forestry Association and pushing the idea of forestry needs with the result that the association's work is more widely known and more widely encouraged and commented upon than ever before in the forty years of its life.

## THE PETRIFIED FOREST

**O**NE of the greatest wonders in the geological world is the petrified forest of northern Arizona.

This forest is in the middle of the Painted Desert which received its fanciful name from the many opalescent colorings of its clays, shales and sandstones.

The trees are of the coniferous variety. Some had attained the height of two hundred feet; many were over one hundred feet. Diameters ranging from one to four feet. Trees, and yet not trees! For now they are wonderful specimens of agate, jasper, and chalcedony—in the form of trees! Much of North America's scientific data on archaeology, anthropology, climatology—that today are considered highly authentic—has been ferreted out from an exhaustive research among these fallen trees.

Fallen and petrified. Relics of the Glacial Period, when all life and vegetation bowed before the merciless ice-rivers which swept down from the North.

Scientists believe that immediately following the ice flow in this western part of the continent there was a volcanic eruption of lava which covered the trees, and

aided by the action of the air, petrified and preserved them. Since neither skeletal nor fossil remains have been excavated in this Desert, it is safe to deduce that the occurrence took place long before the time of man upon this continent. One geologist puts it at least fifty million years ago!

Mystery and more mystery surround these fallen monarchs. Not all their secrets have they yet divulged. But like the famous Forest Bed of Gromer at Norfolk, England, each year more and more important data are being gleaned. Visitors to this spot experience a queer, uncanny feeling. There is something forbidding at the sight of so much devastation; as forbidding as the entrance into the famous Black Forest of Germany. Yet, after all, something compelling. The handiwork of High Wisdom. Sly hints to those of the Present, to those who have eyes to see—of who and what, of who not, and what not, dwelled here in the Past.

To protect this valuable and sacred spot from the overzealous curio seekers, the Government has set it aside as a National Reservation.—*Viola M. Overman.*



# PROPOSED AMENDMENTS TO THE BY-LAWS

The following amended by-laws of the American Forestry Association will be presented to the members for adoption at the annual meeting to be held in Washington, D. C., on January 26, 1922.

The amended by-laws were submitted with the following letter to the Board of Directors at a meeting on December 8, 1921, by a committee composed of Col. W. B. Greeley, Col. Henry S. Graves, F. W. Besley, Philip W. Ayres, Henry S. Drinker, Chester W. Lyman, Nelson C. Brown and P. S. Ridsdale, and with some slight changes in the wording, were adopted:

Washington, D. C., December 2, 1921.

To the President and Board of Directors, American Forestry Association, Washington, D. C.

Gentlemen:

The Committee designated by President Pack to consider and recommend a revision of the existing by-laws of the American Forestry Association, respectfully rec-

ommends the adoption by the Association of the following by-laws. For simplicity and clarity it has seemed preferable to recommend a complete set of by-laws, in which certain changes have been incorporated. The purpose of these changes is two-fold:

(1) To put into effect the general principles approved by the Board of Directors on August 30, 1921, following the recommendations of the conference committee.

(2) To improve the language and scope of the by-laws in certain other particulars, in the belief that the present opportunity for revision should be utilized to render the by-laws as adequate and effective as practicable in all respects.

Two special sections have been included to provide for changing over the Association from the existing to the new procedure in the matter of elections (Section 3 of Article 4), and in the terms of the existing Directors of the Association (Section 2 of Article 6).

## The Amended By-Laws

### ARTICLE I—Name

The name of this Association shall be "THE AMERICAN FORESTRY ASSOCIATION."

### ARTICLE II—Objects

The objective of the Association is to bring about a better handling of the forests of the country in order that these may render their highest service in the economic, industrial, and social development of the nation. The Association aims to foster investigation, research, and experimentation in the science of forest production, management, and utilization; to assemble information regarding the economic and industrial aspects of forests and regarding the service of the forest in protecting lands and waters; to secure from the forest a larger service in: outdoor recreation, in perpetuating wild life, and in other general public benefits; to encourage and further the practice of forestry by individuals, municipalities, states, and the federal government; to promote educational, legislative, and other measures tending to the accomplishment of these objects; to publish a magazine and other literature for the education of the public as to the meaning and importance of forestry and for the dissemination of a knowledge of forestry in its various branches; to place before the people of the country various problems and issues in forestry and to forward, in the interests of the public, specific policies of forestry; to aid in the coordination of the efforts of state forestry associations and other organizations interested in problems relating to forests; to establish and maintain a library; to acquire by purchase, gift, devise or bequest, and to sell, maintain and operate forests and forest lands, for the furtherance of the foregoing objects; to acquire by purchase, gift, devise or bequest such property, real or personal, and to erect thereon such building or buildings, as may be necessary or advisable in the promotion of these objects, and in general to

do and perform all things necessary to further the foregoing objects.

### ARTICLE III—Members and Dues

Section 1. Any person or organization may become a member of the Association upon his or its application for membership being approved by the Secretary.

Section 2. There shall be seven classes of members:

(1) Honorary Members, who shall be such individuals as may be elected by the Board of Directors because of their connection with other forestry associations or their interest in the aims of the Association.

(2) Patrons, who shall be individuals or organizations who shall contribute One Thousand Dollars or more at one time to the permanent fund of the Association.

(3) Life Members, who shall be individuals or organizations who shall contribute at least One Hundred Dollars at one time to the permanent fund of the Association.

(4) Sustaining Members, who shall be individuals or organizations who shall pay annual dues of Twenty-five Dollars.

(5) Contributing Members, who shall be individuals or organizations who shall pay annual dues of Ten Dollars.

(6) Subscribing Members, who shall be individuals or organizations who shall pay annual dues of Four Dollars.

(7) Annual Members, who shall be individuals who shall pay annual dues of One Dollar.

Section 3. Honorary Members, Patrons and Life Members shall be exempt from the payment of annual dues.

Section 4. The dues for the ensuing twelve months shall be payable when an application for membership is approved and annually thereafter. The membership of all those in arrears for one year shall automatically cease. The Board of Directors, however, may, in their discretion, remit the dues of any member.

Section 5. All members, except Honorary Members, shall be entitled to one vote

each at the meetings of the Association, or by mail as so provided, and to hold office therein.

Section 6. The periodical magazine published by the Association shall be sent regularly to all members except annual members, its price being included in the dues. The price of the magazine to non-members shall be fixed from time to time by the Board of Directors.

### ARTICLE IV.—Board of Directors

Section 1. The Board of Directors shall consist of fifteen elected members together with the President and Treasurer of the Association serving as ex-officio members. It shall have the direction and management of the affairs of the Association and the control over and disposition of its funds and property. All members, except Honorary Members, shall be eligible as directors.

Section 2. The Board of Directors shall select each year a Committee on Elections, whose names and addresses shall be published in an issue of the magazine not later than during the month of October. The Committee on Elections shall consist of three members of the Association in good standing for at least three years, who are widely known for professional or industrial attainments or public service in forestry, and who represent as far as practicable the professional, industrial, and public interests embraced in the work and objects of the Association. Not more than one member of the Committee on Elections shall be, at the time of selection, an officer of the Association other than Vice President. Suggestions for nominations for any officer of the Association to be elected at the next annual meeting may be submitted to the Committee on Elections by any member of the Association; nominations for such officers may be made by not less than twenty-five members of the Association, signed by the members submitting them. All suggestions and nominations should be addressed



to the Committee on Elections at the main office of the Association and must be received by the Committee on or before November 1. The Committee on Elections shall nominate a candidate for each officer to be elected at the next annual meeting of the Association. The candidates nominated by the Committee on Elections, together with any other nominations made by not less than twenty-five members of the Association, which must have reached the Committee on Elections prior to November 1, shall be published in the December issue of the magazine, with the names of the members of the Association making the nomination appended to the nomination of any such candidates. The Secretary of the Association shall cause a ballot to be printed containing the names of all candidates nominated by the Committee on Elections and by any group of twenty-five or more members of the Association as hereinbefore provided and shall mail such ballots to all members of the Association having the right to vote at least four weeks in advance of the annual meeting. The members of the Association, except Honorary Members, shall elect the officers by mailing to the Secretary in sufficient time to be received one week before the annual meeting a ballot containing the names of the candidates to be voted for. Every ballot shall contain the name and address of the member submitting it. The ballots shall be counted by three tellers appointed by the Committee on Elections, who shall decide any question as to the ballots submitted and who shall officially certify the total vote cast. A majority of the ballots cast shall be sufficient for election.

Section 3. Immediately following the adoption of these By-Laws, the Board of Directors shall designate a Committee on Elections to conduct nominations for all officers to be elected for the year 1922 and shall announce such Committee before the adjournment of the annual meeting. Suggestions for nomination by any member or nominations for such officers by any group of twenty-five or more members shall be submitted to the Committee on Elections in accordance with the foregoing procedure not later than February 10, 1922. The Committee on Elections shall cause all nominations duly submitted, together with its own nominations, to be published in the March issue of the magazine; and a ballot containing the names of all candidates nominated shall thereupon be sent to every member of the Association, except Honorary Members. Ballots must be received at the office of the Association within four weeks from the mailing thereof by the Secretary; such date to be promptly certified by him to the Committee on Elections. Tellers shall be appointed by the Committee on Elections and shall report the vote to the Board of Directors which shall announce the names of the officers elected in

the next issue of American Forestry and notify such officers by mail.

Section 4. Any vacancy among the officers, whether occasioned by death, resignation or otherwise, may be filled for the remainder of the year by the Board of Directors by ballot at their next meeting after the happening of such vacancy. If a Director shall be elected as President or Treasurer of the Association, the vacancy in the Board of Directors thereby created shall be filled for the balance of the year in the regular manner.

Section 5. Seven members of the Board of Directors shall constitute a quorum for the transaction of business.

Section 6. Meetings of the Board of Directors may be held, either at the office of the Association in Washington, D. C., or at such other place in the United States as the President may determine. Meetings of the Board shall be held upon five days' notice, whenever called by the President or by three members of the Board, and a meeting of the Board should be held at least once every three months.

#### ARTICLE V.—Committees

Section 1. *Executive Committee.* The President may appoint seven members of the Board of Directors to act as an executive committee, which shall have and exercise such powers during the intervals between the meetings of the Board as the Board may delegate to it.

Section 2. *Finance Committee.* The President may appoint three members of the Board of Directors to act as a finance committee in advising with the Secretary and Treasurer with reference to financial matters, and to exercise whatever powers are conferred upon it by the Board of Directors.

Section 3. The annual financial report shall be printed in the next issue of the periodical magazine published by the Association after the annual meeting.

#### ARTICLE VI.—Officers

Section 1. The officers of the Association shall be a President, twenty-one Vice Presidents, fifteen elected and two ex-officio Directors, a Treasurer, a Secretary, and a Forester. The President, Vice Presidents, and the Treasurer shall be elected annually; three Directors shall be elected annually for terms of five years each. The Secretary and the Forester shall be chosen by the Board of Directors to serve for whatever term they may designate. The President and Treasurer shall be ex-officio members of the Board of Directors. All officers shall serve until their successors are elected.

Section 2. The Directors designated as permanent or elected for stated terms by the members of the Association under the By-Laws adopted in February, 1921, are hereby reinstated for the terms for which such Directors were elected prior to the adoption of said By-Laws, that is:

The terms of Henry S. Drinker, Chester W. Lyman, and Charles F. Quincy shall expire at the annual meeting of 1923.

The terms of E. F. Baldwin, N. C. Brown, Standish Chard, J. H. Hammond, and Addison S. Pratt shall expire at the annual meeting of 1924.

The terms of all other Directors now serving shall expire at the annual meeting of 1922.

There shall be elected at the annual meeting of 1922 seven Directors who shall divide themselves into three classes by lot to serve for the following terms: three for five years, three for four years, and one for three years. There shall be elected at the annual meeting of 1923 three Directors who shall serve for five years. There shall be elected at the annual meeting of 1924 five Directors who shall divide themselves into two classes by lot to serve for the following terms: three for five years and two for one year. At the annual meeting of 1925 and at each annual meeting thereafter three Directors shall be elected for the full term of five years. If vacancies occur in the Board of Directors, Directors shall be elected at the next annual meeting to fill such vacancies, in each case for the unexpired term of the Director whose position has become vacant as shall have been determined by the original election of such Director or by lot as provided herein.

#### ARTICLE VII.—The President

The President shall be the chairman of the Board of Directors and shall preside at all meetings of the Association and of the Board of Directors. In his absence the members present at any meeting of the Association or of the Board of Directors, as the case may be, shall appoint one of their number to act as chairman of the meeting. The President shall be ex-officio a member of all committees.

#### ARTICLE VIII.—The Treasurer

The Treasurer shall have the custody of the funds of the Association, shall countersign all checks, shall perform such other duties in connection with the finances of the Association as the Board of Directors may order, and shall present to the Board of Directors at their first meeting each year a statement showing the receipts and disbursements of the Association for the preceding year and its assets and liabilities.

The Board of Directors may appoint an Assistant Treasurer to countersign checks, in the absence or disability of the Treasurer, or during any vacancy in that office, and to perform such other duties in connection with the finances of the Association as the Board may require.

#### ARTICLE IX.—The Secretary

The Secretary shall be the managing officer of the Association, shall keep the minutes of all meetings of the Association and of the Board of Directors, shall have



the custody of the seal of the Association and of all documents, books and collections, shall sign all checks, shall conduct the correspondence of the Association not otherwise provided for, shall keep a list of the members of the Association with their addresses, shall notify members of the Association and of the Board of Directors of the time and place of all meetings, and shall perform such other duties as the Board of Directors may require.

#### ARTICLE X.—The Forester

The Association shall employ a Forester who shall be a man of recognized attainments and high standing in forestry matters. He shall be the expert of the Association in its technical work and a representative of the Association in its public forestry activities. Under the direction of the Board of Directors, he shall hold a responsible relationship toward the editorial policy of the magazine published by the Association as to forestry matters, shall promote the objects set forth in Article II of these By-Laws, shall advance such public forest policies as the Association may endorse, shall represent the Association in supporting national, state, municipal, and private for-

estry developments, and shall perform such other duties as the Board of Directors may require.

#### ARTICLE XI.—Meetings

Section 1. The annual meeting of the members of the Association for the election of officers and for the transaction of such other business as must be transacted by the entire Association shall be held in Washington, D. C., or at such other place, on such day in January and at such hour as the Board of Directors shall determine.

Section 2. Special meetings of the members of the Association may be called at any time by the Board of Directors.

Section 3. Notice of the Annual Meeting, and of any special meeting, shall be published in the magazine of the Association at least three weeks before the date fixed for the meeting.

Section 4. The presence of thirty members of the Association shall constitute a quorum.

#### ARTICLE XII.—Local Representatives and Affiliated Organizations

Section 1. The Board of Directors may designate such representatives of the Association in various portions of the United States and under such conditions as to

compensation or payment of traveling expenses as it shall deem wise and desirable in furtherance of the objects of the Association. The local representatives so designated shall perform their duties under the direction of the Secretary or Forester of the Association as the Board may determine.

Section 2. The Board of Directors may, by resolution, recognize and designate as organizations affiliated with the American Forestry Association such State Forestry Associations or other local organizations whose objects are in accord with those of the Association as shall request such recognition and designation, and as shall, in the judgment of the Board, in view of their character, membership, and purposes, make affiliation desirable in furtherance of the common objects of the Association and of the local organization.

#### ARTICLE XIII.—Amendments

These By-Laws may be amended at any annual meeting of the members of the Association by a two-thirds vote of the members voting by mail, provided that notice of the proposed amendment has been published in the magazine together with the notice of the meeting.

## HOW SKUNKS DEFEND THEMSELVES—Continued from Page 29

countries, their extraordinary means of offense and defense having rendered them famous.

Skunks are animals of moderate size, and in some instances would be considered small. In form they are stout, with very bushy tails. The colors of all are black, offset in the various species by white, the markings being in stripes, bands, spots or patches. Pelage of such a striking character as this renders the animals very conspicuous, and this is especially the case when they are seen upon the snow or upon very light colored soil. Skunks possess unwebbed toes, and these are of the ordinary number, their feet presenting nothing peculiar.

In their movements skunks are slow and deliberate, and they are not capable of attaining a very high rate of speed in running. They have teeth of the ordinary pattern of the smaller carnivora, there being about thirty-two or thirty-four.

The very long and rather coarse hair of a skunk leads one to suppose that the animal is stouter than it really is. They have somewhat long bodies, with small head, and short and rounded ears, and they become inordinately fat at good feeding seasons of the year; at such times they appear very stout and ungainly.

We have a very distinct species of skunk formerly known as the White-backed Skunk, which is found from

Texas to Arizona, from whence it ranges down through Mexico, Central America and into Patagonia. The writer has never seen this animal alive, and authors are at variance in their descriptions of its specific characters. One of the chief features in the external anatomy of this animal is its nearly straight, remarkably long and powerful claws. Its tail is quite unlike the tail in other skunks, being anything but bushy. The hair is very brittle, resembling the hair on our Prong-buck. It is said that in nature this animal is quite fearless, is very easily trapped, and will even make no endeavor to escape when simply approached and taken by hand. As it commands all the powers of offense and defense, however, possessed by its kin throughout this country, such an operation is fraught with no little annoyance, to say the least. If near its burrow, or some other convenient hollow in rock, log or tree, it will avail itself of the same and make good its escape.

This skunk has feeding habits very similar to those of other skunks, and it is likewise found both in the timber and upon the plains. Hunters say that its tail is usually held erect when walking, and, being very conspicuous in its color, it is an easy matter to discover the animal as it passes through low vegetation of any kind.



# AMERICAN FORESTRY GUIDES DEPARTMENT

## SOLAN L. PARKES, EDITOR

THIS DEPARTMENT IS CONDUCTED ESPECIALLY TO INSTRUCT THE YOUTH OF AMERICA TO AID IN CONSERVING AND PRESERVING THE FORESTS, TREE, PLANT, BIRD AND HARMLESS ANIMAL LIFE.

**W**E have secured expressions of opinion from foresters, conservationists and other public-spirited citizens representing every state in the Union as to the best service which the American Forestry Guides can render to their country.

As a result of this we have arranged a pledge which is taken by each Guide. It is as follows:

"Believing as an American Forestry Guide that every citizen should endeavor to see that our forests and other trees, wild plants, birds and other harmless wild life, should be protected and conserved for our common good, I do hereby pledge myself to do nothing willfully or carelessly to injure any forest or other trees, wild plants, birds or harmless animals, to do all in my power to protect and preserve the same, to prevent and extinguish forest fires, to obey the laws of the United States and the State wherein I may be, and to urge others to do likewise."

A small manual is being prepared to tell the Guides how to do their duty without being hindered in school studies, and at the same time receive an abundance of exercise and pleasure. The fulfillment of this program will result in building up health and in acquiring simplified knowledge about trees, birds and animal life.

We are receiving many letters in reference to the Warden Guide and are happy to state that many of the boys and girls who are remotely located and hitherto have lacked opportunity to become a member of a National Organization are willing to help the forests.

It is gratifying to know that educators, scientists, naturalists and the heads of State Departments have opened their vast treasure houses of knowledge for us to help the boys and girls of the American Forestry Guides, to get a better understanding of the great out-doors, and the benefits that we derive by the wise use of the things we will find there.

A committee of writers of boys and girls' books composed of men and women who know what boys and girls should read, will carefully review the books which we are recommending to our members. In this same manner every committee is being carefully organized and we can assure our membership and the American people that the greatest care is being exercised to make available only that which will bring about a better, more beautiful and resourceful United States through the education of the youth.

We want the boys and girls living in the rural districts of the country to join the growing family of the American Forestry Guides. School teachers may find it a very good plan to organize posts of Forestry Guides in their schools. It will help them in their nature study work.

Boy and girl groups in villages, towns and cities should organize themselves into the American Forestry Guide Posts, and help in the prevention of forest fires. Never let a forest fire burn, if you can possibly prevent it. The American Forestry Guides have been helpful to the State of Pennsylvania in getting two of the largest railways in the state to place forest fire prevention cards in all their stations. One company even had posters placed in all of their coaches in the state.

The Guides have also started a tree-planting campaign to help the State Forestry Department in planting its four million seedling trees on waste lands, which are producing nothing.

The Guides also helped to build a big Forestry exhibit for a big educational event in Pennsylvania. They assisted a number of Manual Training departments in High Schools throughout the country in preparing tree exhibits.

We want to back up our President, who desires to see an elementary Forest Course taught in the public schools of the various states. Let us make this one of our objectives and follow the example set by the State of Tennessee, where a compulsory Forestry course has been introduced into the public schools.

Address communications to The American Forestry Guides, 1214 Sixteenth Street, N. W., Washington, D. C., or 431 Elm Street, Reading, Pennsylvania.

\* \* \* \* \*

We want the American Forestry Guides to build bird houses, and erect them, in order that when our feathered friends visit us next spring they will find a house ready for them to move into. Guides will be surprised what a difference it will make in their home surroundings if they have a family or two of native birds making their home there too. It has often happened, however, that houses are built, and erected, but not used by the birds. This is because the nesting box is not of the right size, the diameter of the entrance is too large or too small, or placed too high or too low. The following table, prepared by Ned Dearborn, Assistant Biologist of the United States Biological Survey, on the proper dimensions for various species of birds, will be found helpful in the building of bird houses:



Species	Floor of Cavity	Depth of Cavity	Entrance above Floor	Diameter of Entrance	Height above Ground
	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>	<i>Inches</i>	<i>Feet</i>
Bluebird	5 by 5	8	6	1½	5 to 10
Robin	6 by 8	8	(*)	(*)	6 to 15
Chicadee	4 by 4	8 to 10	8	1½	6 to 15
Tufted titmouse	4 by 4	8 to 10	8	1¼	6 to 15
White-breasted nuthatch	4 by 4	8 to 10	8	1¼	12 to 20
House wren	4 by 4	6 to 8	1 to 6	¾	6 to 10
Bewick wren	4 by 4	6 to 8	1 to 6	1	6 to 10
Carolina wren	4 by 4	6 to 8	1 to 6	1½	6 to 10
Dipper	6 by 6	6	1	3	1 to 3
Violet-Green swallow	5 by 5	6	1 to 6	1½	10 to 15
Tree swallow	5 by 5	6	1 to 6	1½	10 to 15
Barn swallow	6 by 6	6	(*)	(*)	8 to 12
Martin	6 by 6	6	1	2½	15 to 20
Song sparrow	6 by 6	6	(†)	(†)	1 to 3
House finch	6 by 6	6	4	2	8 to 12
Phoebe	6 by 6	6	(*)	(*)	8 to 12
Crested flycatcher	6 by 6	8 to 10	8	2	8 to 20
Flicker	7 by 7	16 to 18	16	2½	6 to 20
Red-headed woodpecker	6 by 6	12 to 15	12	2	12 to 20
Golden-fronted woodpecker	6 by 6	12 to 15	12	2	12 to 20
Hairy woodpecker	6 by 6	12 to 15	12	1½	12 to 20
Downy woodpecker	4 by 4	8 to 10	8	1¼	6 to 20
Screech owl	8 by 8	12 to 15	12	3	10 to 30
Sparrow hawk	8 by 8	12 to 15	12	3	10 to 30
Saw-whet owl	6 by 6	10 to 12	10	2½	12 to 20
Barn owl	10 by 18	15 to 18	4	6	12 to 18
Wood duck	10 by 18	10 to 15	3	6	4 to 20

\*One or more sides open.

†All sides open.

## QUESTION BOX

R. C. E., III.—We will see to it that the pamphlet asked for will be mailed to you.

C. A. B., Penna.—The information you asked for you will find in the bird house building schedule.

V. B., Col.—We will send the information desired.

A. W. B., Penna.—We will try to get the map for you, of the National Forests, asked for.

A. H. B., N. J.—Will try to find out the name of the publisher of the book you desire.

T. M. B., Jr. Md.—As soon as we receive, from the printer, the material you ask for, we will forward it to you.

A. T. C., Penna.—After going more fully into your letter we will endeavor to help you on your problems.

G. C., Tenn.—What you ask for is now in the printers hands. We will mail same shortly.

D. C., III.—You will find your answer in the Dearborn bird house survey.

I. H. C., N. Y. C.—Certainly you can enroll as a Warden Guide, we like you.

F. R. B., Mass.—As soon as we get the matter from the printer, which you ask for we will mail same to you.

G. J. D., Penna.—Will forward the book. Yes, you can organize a post.

J. W. G. D., Minn.—We will get the information for you.

L. F. D., Ken.—You are right. The forest fires must stop burning. We will send the information desired.

H. H. F., Mich.—As soon as we get the material from the printer we will mail you a complete outfit.

H. G. D., N. Y.—We are glad to see you interested in forest fire prevention the way you are. Will get you a copy of the pamphlet for you.

W. B. F., Penna.—Certainly an American Forestry Guide can go hunting, recognizing of course the laws of your State. Hunt like a true sportsman. Give the game a chance.

W. I. E., N. Y.—Eurely, it is every ones duty to keep our forests in good condition. You can not help your State better, than by preventing forest fires.

I. L. H., Wash. D. C.—We are glad to accept your services. Hope there are more like you.

W. W. L., Ohio.—Glad to have your letter. Thanks for the names.



# THE FORESTRY COMMITTEE AT BOGALUSA

By Austin Cary

THE picture shown was taken on November 16th last, at a place already well known in connection with its forestry development, and that promises in future times to be still more famous—Bogalusa in Louisiana, the town built around the manufacturing plants of the Great Southern Lumber Company.

For two days previous the Forest Policy Committee of the Chamber of Commerce of the United States had been holding hearings in New Orleans. Gravely and no doubt with the sense of responsibility weighing on them, they had listened to complaints, to statements of conditions, to men's ideas of what ought to be done; then came a day that must have been as welcome as it seemed well earned, of refreshment, of being entertained, of seeing actual achievements that gave substance to the ideas they had been considering.

Hospitality is an idea not naturally connected with the lumber industry perhaps, but here it was generous, lavish even. Nor are large-scale plans reaching far into the future commonly attributed to it. Here, however, there was clear evidence of such foresight and visible achievement in that direction. The spectacle of men of many

kinds working harmoniously together in a common purpose was manifested too.

It was give and take in the matter of good will and entertainment for which Col. W. H. Sullivan of the Company, in charge of arrangements, could be trusted to provide channels. Arriving in the early evening, the Committee found itself face to face with a gathering of a hundred or more, the foremen of all the Company's operations, the officials and business men of the town. That at Bogalusa meant a banquet; at its close Mr. David L. Goodwillie, Dr. Hugh P. Baker, Dr. Henry S. Drinker and Harvey N. Shepard of the Committee had interesting things to say.

Then the next day as they walked about the busy town or were taken to different points in its neighborhood by automobile, the following things are what the gentlemen of the Committee were shown or realized. Of the two divisions into which they fall the human naturally comes first as both most interesting and important.

A management with broad outlook and possessed of large means settled on the idea of the permanence of their town on the industrial basis of paper manufacture.



Top Row—Mrs. M. M. Willmott; M. L. Alexander, Louisiana State Conservation Commission; Hugh P. Baker, Member of the Committee, New York City; O. M. Butler, Forest Products Laboratory, Madison, Wisconsin; Dr. Henry S. Drinker, Member of the Committee, Pennsylvania; C. F. Quincy, Member of the Committee, New York City; D. L. Goodwillie, Chairman of the Committee, Chicago; William H. Sullivan, Mayor of Bogalusa, President Southern Lumber Company, H. N. Shepard, Member of the Committee, Boston; W. DuB Brookings, Secretary of the Committee, Washington; Mrs. J. H. Cassidy; Roy L. Hogue, Manager Interior Lumber Company, Jackson, Mississippi;

Second Row—J. E. Rhodes, Secretary-Manager, Southern Pine Association; Walter Parker, General Manager, Association of Commerce, New Orleans, Louisiana; Mr. Frank Sullivan; Lenthall Wyman; H. J. Stahl; Mr. F. Salsman, President Salsman Lumber Company, Slidell, Louisiana; H. P. Mills, District Forester; J. K. Johnson, Forester, Great Southern Lumber Company; E. A. Hauss, President Alger-Sullivan Lumber Company, Century, Florida; G. A. Townsend; W. G. Flanders; A. T. Sherrell; J. H. Cassidy, Assistant General Manager, Great Southern Lumber Company;

Lower Row—James T. Ward, Secretary Mississippi Conservation Commission, Wayne County, Mississippi; V. H. Sonderegger, Louisiana State Forester; R. D. Forbes, Director Southern Forest Experiment Station, New Orleans; I. F. Eldredge, United States Forest Service, Washington; D. T. Cushing, Great Southern Lumber Company, Bogalusa; Austin Cary, United States Forest Service, Washington; James H. Jones, Land Agent, Century, Florida; L. Palmer, Lumber World Review, New Orleans, Louisiana.



Taking the lead in the execution of this plan as forester a native of the region, for many years connected with the Company's affairs, fulfilling a lifelong ambition to promote the growing of timber, and because he sees in it prosperity not only for his Company but his people, putting his whole mind and heart into the work. Adjustments of interests involved are easy in his hands. Enlightened and made friendly through employment, through personal contact, through the schools, even by dedication to their soldier dead of an area of newborn longleaf pine, the country people follow him as they would no other. And under him the Company's men playing their several parts, safeguarding against fire, designating the trees to be reserved for seed, and a whole logging crew of the usual stamp, men of all sorts and of different colors, but each to whom a share falls doing his work or manipulating his machinery in a fashion to best carry out the far-reaching plans of the Company.

And as to the woods themselves these things:—

A stock of virgin timber sufficient to last the great plants until new grown wood can be supplied.

Young growth half way along in its development, not general over the county indeed, but in some abundance, nevertheless, and showing clearly what the soil will do.

Close to town 800 acres fenced, protected from fire, showing now the plants grown from seed of three species of pines that were sown nearly a year ago, to be the show place and site of trial and experiment.

Lastly 5,000 acres on which fell and germinated the long-leaf mast of 1920, fenced and protected too, green now with a shade that is characteristic.

To men whose minds were turned that way, and so open to receive impressions, those had here must have been truly inspiring. And the thought that this enterprise is alone of its kind in the South or the country would not have been allowed too much weight; such men as the commission know that the times are changing in favor of those with broad vision, who throw off the shackles of past habits and ideas and look strongly into the future. And the spirit of the thing, too, is of a kind that is self propagating.

Our country and its prosperity are bound up in its forests! It is a big idea, worthy of an effort and allegiance. But let us be sane and cheerful as we go about

its propagation, seeing the good where we may, giving credit where it is due, believing in a fortunate outcome in spite of difficulties and setbacks.

About forty leading lumbermen, timber owners, State and Federal forestry and conservation officials and others interested in perpetuating the forests of the South, put in a busy two-day session at New Orleans. Fire protection and tax relief were the dominant questions discussed. The advanced laws of Louisiana and the nationally known experiments of Henry E. Hardtner at Urania, Louisiana, and of the Great Southern Lumber Company at Bogalusa were also topics fully covered.

On the return from Bogalusa, the party stopped off at Slidell and inspected the excellent reproductions of the Salsman Lumber Company. On return to New Orleans, the Committee left for their homes.

A party consisting of J. E. Rhodes, Secretary, and Manager, Southern Pine Association, W. DuB. Brookings, Secretary of the Committee, J. W. Watzek, Jr., of the Crossett Lumber Company, and A. G. T. Moore of the Southern Pine Association made a special visit to the properties of Hon. H. E. Hardtner, where they spent a day in inspecting the results of this pioneer project in reproducing Southern Pine.

Members of the National Forestry Policy Committee who attended the meeting were: D. L. Goodwillie, Chairman, Vice-President Goodwillie Brothers Box Manufacturers, Chicago; Dr. Hugh P. Baker, Vice-Chairman, Secretary-Manager American Pulp and Paper Association; F. C. Knapp, President Peninsula Lumber Company, Portland, Oregon; H. N. Shepard, President Massachusetts Forest Commission, Boston, Massachusetts; Dr. H. S. Drinker, Director of the American Forestry Association and President Emeritus of Lehigh University, Philadelphia; C. F. Quincy, Director of the American Forestry Association and President Q. & C. Company, New York; W. DuB. Brookings, Manager Natural Resources Department of United States Chamber of Commerce, Secretary of the Committee.

The Committee in its investigation of forestry conditions has traveled 9,999 miles and passed through thirty-four states.

The Committee will shortly submit a report to the Chamber of Commerce on its nation-wide study of the whole forestry question.

## Importing Wood For Newsprint

**T**WO-THIRDS of the newsprint used in the United States in 1920 was made from wood grown on foreign soil. Out of more than 4,500,000 tons of wood pulp consumed for all purposes 35 per cent came from foreign markets. Over \$191,000,000 was paid for the pulp wood, wood pulp and paper imported. To this extent the United States has become dependent upon markets outside its control. This country can no longer draw its supply from our rapidly disappearing eastern forests. As a result primarily of forest depletion the cost of pulp wood rose more than 110 per cent in the five-year period 1916-

1920, and of wood pulp 35 per cent since 1918. These and other facts are presented in a bulletin "Pulp Wood Consumption and Wood Pulp Production, 1920," prepared by the Forest Service in cooperation with the American Pulp and Paper Association of New York. Prior to 1909 practically all the paper consumed in this country was manufactured here. This is no longer true. The paper-making industry in the United States has grown until its capitalization approaches the billion dollar mark. "The trouble in brief," says the bulletin, "is that we have mills without forests in the East and for-



ests without mills in the West." In New England and New York where the forests have been largely worked out, there is the heaviest concentration of mills. In Alaska, where there is enough spruce and hemlock to supply present American news-print requirements indefinitely, there is only one mill. The industry has remained stationary in the East while the lumber industry has moved West.

"In Minnesota, for instance, where domestic spruce forms 95 per cent of the consumption, pulp wood cost \$10.40 per ton less than in New York. If New York pulp mills could have bought their spruce from native forests at a saving of \$10 a cord the savings on their imports alone would have been \$5,000,000 during the year 1920."

Expensive Eastern mills can not be moved West nor can the great forests of Alaska and the Pacific slope be set down in New England and New York. Nor can the United States count upon reducing the amount of pulp wood necessary to meet present requirements. Further, Canada can not be depended upon indefinitely as a source

of supply, for Canadian forests are no more limitless than those of the United States. The remedy is two-fold: locate more mills on the Pacific slope and reforest the East.

"Reforestation will take not only skill, energy and money," say the foresters, "but most serious of all, many years must elapse before the East can be put on a thoroughly self-supporting basis. Yet there is no choice left to us. The work must be undertaken. We must have pulp and for every year of delay we must pay increasingly heavy penalties for neglecting to restore the forests as fast as the wood is consumed."

As the result of unregulated lumbering, it is pointed out, followed by fire, more than 60,000,000 acres of potential forest lands, most accessible to Eastern and Lake State mills, are now producing nothing or supporting a growth of little use except for firewood. If they were producing only a third of a cord of pulp wood an acre, every year, the total yield would be 20,000,000 cords or approximately twice the amount needed to supply the entire American consumption at the present time.

## A PROFITABLE CROP

**L**UMBERING was early a leading enterprise in New England, and up to 1840 white pine made up almost the entire softwood cut. By 1870 the original white pine was practically all removed, and by 1880 the second-growth pine forests were yielding an annual cut of 200 to 300 million board feet. With the extensive use of low grade pine for boxes and matches, this has increased to 600 million feet. The New England States produced more than one-fourth (28.7 per cent) of the total output of white pine lumber cut in the United States in 1918. Maine is today producing more white pine lumber than Idaho, the great white pine State of the northwest. Not so many years ago, Pennsylvania, Michigan, and Wisconsin were producing

pine will do much to solve our timber supply problem.

Our idle lands must be restored to timber production, and no other tree is so valuable for this purpose as the white pine. Massachusetts is to be congratulated on establishing a new principle in State forest conservation. The recent law which provided for the planting of white pine on 100,000 acres of idle lands in this State, as rapidly as such lands can be acquired, means that such

lands will soon be returning revenue to the State far above their cost.

White pine not only adds the crowning touch to the average New England landscape, but it is also a crop that yields larger profits than any other crop that can be grown on a large proportion of the poorer soils of New England



Photograph by A. B. Brooks.

THE RESULT OF "NEGLECTING" A PASTURE FIELD

enormous quantities of pine. In 1918 these three States combined, cut only approximately one-third as much white pine as was cut in the New England States. White pine has come back in the New England States and it will come back elsewhere. The second-growth stands of white

and New York. It is a crop that furnishes winter work on the farm, and supplies the material required in operating numerous factories. Its rapid growth on lands that would otherwise be waste has paid off mortgages, improved farms, and given the children college educations.



# THE LANDSCAPE VALUE OF TREES

By Frederick W. Kelsey

With the growing interest in forestry the landscape effect of the trees used for reforesting purposes should not be overlooked. As country homes increase in number the aesthetic features in both cultivated areas and woodlands become more and more important. Progress in this direction in the United States may be classified into three distinct periods.

First: The early clearing of the native woods growth with waste and destruction alike of the natural foliage effects and the irreparable loss of the timber supply, without consideration being given to future needs.

Second: The awakening to a realization of this suicidal policy as manifested in the conservation movement which has now become a subject of nation-wide importance.

Third: The prospective period when the beauty of the forest growth will in the treatment of forest land be recognized as an important factor of development in connection with the utilitarian purposes of the forest.

The fact is now everywhere appreciated that a treeless landscape is like a treeless city, an unattractive and depressing sight. That it is extremely detrimental from an economic viewpoint as well as from that of health and material progress is axiomatic, and forcibly demonstrated in the arid regions in China and other parts of the world, while we have already convincing examples of it in portions of this country where forest land is lying idle and unproductive.

Now, that the conservation and reforesting movement, local, state, and national, has assumed such comprehensive proportions, growing public interest will go steadily forward toward remedying as far as possible the errors of the past and providing for the future.

It is to the use of attractive trees where practicable in connection with reforesting developments, I would call attention. The necessity of suitable trees in variety of size, form, foliage, and flower for all landscape effects in private and public parks, country estates and other ornamental grounds as planned or planted, calls for no elaboration or discussion here. The conditions are obvious, and effective object lessons are matters of common observation.

In the broader field of forest planning, how many stop to consider what the future appearance of the planted area is to be? No one should be, or if well informed could be so visionary or impractical as to contend that beauty of the forest should be primal rather than a secondary or collateral consideration. Yet is there any valid or tangible reason why, in the selection of the kinds of trees for such planting, the varieties suitable for the soil and situation should not be chosen and the appearance of the forest plantations in future years considered?

The rugged pioneers, from the landing of the Pilgrim Fathers to the wood choppers and timber cutters from

New England to the Pacific Coast, could see no harm to future generations yet unborn following in the wake of their cuttings. The active hustling man of today, whether the get-money-quick type, the staid business or professional man of affairs, or the industrial worker, as a rule apparently loses sight of the important part art and beauty play in national life as a country attains age and as culture and wealth reach toward higher civilization.

In cities and urban communities this fact is becoming more and more recognized. Attractive buildings, art museums, fine parks, embellished parkways, municipally planted streets and other attractive features, indicate the trend of thought and effort to make both town and country beautiful.

Trees in the picture cannot be overlooked; and in some respects and in many places are the crowning features of the landscape attractions. The builders of the future a decade or more ago had the imagination to see in advance of their time what these plans and constructions would mean to the public, as we now see them and enjoy them.

There is no more beautiful and mysterious thing in nature than the unfolding and growth of the hardy trees. A combination of the deciduous and evergreen varieties produces from the unfolding of the new buds and flowers in spring until the incomparable tints and colors in autumn one constant succession of marvelous effects. Whether in lawn, park, or forest the contrast in form and beauty attracts the beholder and enchants the lover of nature.

In forest planting in some locations it may be, not infrequently is, necessary to use a single variety, resulting in a monotonous and sombre appearance. But in many locations where the general effect is noticeable from far or near, there would seem to be no difficulty in arranging the planting for the best attainable forest growth, and at the same time making the plantation, at least in some respects a thing of beauty as well.

Even where no deciduous trees are admissible, a selection of the evergreen varieties as commonly used for forest planting, such as the Scotch Pine, Red Pine and White Pine, the different spruces, Balsam and Douglas Fir, Hemlock, etc. interspersed with Larch, give a variety of coloring which adds a picturesque feature to the area as a whole without in the least detracting from the forest growth required.

For the encouragement of forest planting, the requisite trees are now grown in nurseries as well as in the state forestry department in very large quantities. They are produced at low cost and are sold at relatively low prices. Tree seeds are also becoming more and more an important business both for the use of nurserymen and state nurseries, also for private forestry projects.



# FOREST POLICY ASSURES GREATEST TIMBER GROWTH

ON the policy of sixteen years standing, National Forests of the United States at the present time are administered by the Department of Agriculture in such a way as to promote the greatest possible utilization for all purposes and at the same time the greatest possible growth of timber, the Secretary of Agriculture states in his annual report to the President. The administration of the forests under the policy developed by the department, the Secretary states, includes provisions for the following:

Protection from fire.

Regulation of cutting, tree planting and forest management to secure the maximum growth of timber.

Full utilization of forage resources for live-stock raising.

Classification of the forest lands and the elimination of areas most suitable for farming.

The use of the lands for a wide range of purposes, including industrial developments and recreation.

The fullest possible development of water powers.

The readjustment of boundaries to include forest lands and to exclude other lands.

In the administration of this policy, the Secretary states, the well-being of local communities, largely agricultural, is a primary consideration. The policy also contemplates, in the language of the Secretary:

"The extension of the National Forests through the purchase of lands which will protect the watersheds of navigable streams. The National Forests established by Executive order or by legislation now cover the headwaters of nearly all the important streams beyond the Mississippi and protect enormous investments in irrigation works, irrigable farms, and hydro-electric development. They are now slowly being extended by purchases over the watersheds of navigable streams in the eastern States and should be extended still further as rapidly as possible.

"This policy represents today the most striking application of public foresight to land problems in the history of the United States.

"Scientific research with a view to—

"Ascertaining and demonstrating through the activities of forest experiment stations the cheapest and most effective methods of growing the maximum timber crops of the best species.

"Products investigations centered mainly at the Forest Products Laboratory at Madison, Wisconsin, to ascertain and demonstrate means of preventing waste and the most effective means for the manufacture and utilization of our forest resources. These investigations are designed to extend the life of our present resources, reduce to a minimum the production necessary to meet future requirements, and indirectly to make the growing of timber more profitable.

"Investigations of timber resources, the extent of forest lands, and other economic questions, such as timber taxation, in order to secure data which must underlie the development and application of a National Forest policy.

"Dissemination of information and cooperation with States, timberland owners, and farmers in the protection and management of public and privately owned forests and farm woodlots. These activities include—

"Fire protection through cooperation between the Federal Government, the State governments and private owners.

"Cooperation with the management of privately owned timberlands to check their devastation and assure the continued use for timber growing of lands not better suited for other purposes.

"The dissemination of information which will make possible greater and better production on the 200,000,000 acres of farm woodlots owned by the individual farmers of the Nation. Woodlot products now rank in value as one of the first three or four principal farm crops of the country. The yield of these farm woodlots can be immensely increased by better methods.

"Publicly owned forests with the greatest additions which can be anticipated can not alone meet our requirements for wood. The department is therefore attempting by all means at its disposal to secure the adoption of a national policy for the production of timber on the privately owned lands most suitable for this purpose."

An administrative force remarkable for its efficiency has been built up and trained in this work, the Secretary says. He continues:

"Methods of cutting timber have been developed under which the forest reproduces naturally, and these requirements have been so harmonized with practical limitations of lumbering that the demand for National Forest timber has grown steadily. The condition of the National Forest ranges has been very greatly improved and at the same time the stock which they can support without damage has been increased by approximately one-third. A system of fire protection has been established which has and is serving as a model to State and private agencies alike. In general, all National Forest resources have been brought into use. Western public sentiment, at first decidedly hostile, now almost universally supports the present form of administration, and western stockmen have even gone so far in many instances as to demand the extension of the National Forest system of range management to the remaining public grazing lands; in short, the National Forests are now vindicated by their fruits.

"Some 2,000,000 acres of forest lands have been purchased at the headwaters of navigable streams in the East, and these have been placed under an administration



comparable with those of the western forests. Favorable progress in purchases was made during the past year.

"Forest products investigations, which at their initiation were ignored by the forest industries of the country, have through the demonstration of their benefits permeated the forest industries almost without exception and have given an entirely new conception of the possibilities in the conservation, manufacture and utilization of forest products. A beginning has been made in the establishment of forest experiment stations which should as rapidly as possible be extended to cover at least all of the principal forest regions of the country.

Notable contributions have been made to our knowledge of remaining timber supplies and related economic subjects.

"Information on the need for timber growing and the best methods for growing and utilizing timber have been widely disseminated. Public opinion has been aroused until now there is a powerful Nation-wide support for the adoption of a national policy which will bring about the growing of timber on privately owned lands to supplement that which can be produced on National Forests and other public holdings."

## FIRES ON THE NATIONAL FORESTS

By B. W. Greeley, United States Forester

THE area of National Forest lands burned over in the fiscal year 1920 was 342,193 acres, as against 2,007,034 in 1919; the estimated damage was \$419,897, as against \$4,919,769; and the total cost of fire-fighting (exclusive of the time of Forest officers) was close to \$1,000,000, as against \$3,039,615. District 1 (Montana and northern Idaho) had much the largest number of fires (1,716), and had 25 of the 99 fires which caused damage in excess of \$1,000. District 6 (Washington and Oregon) had 1,385 fires, and District 5 (California) 1,338. Together, these three districts had 73 per cent of all the fires—exactly the same percentage as in 1919.

The figures given reveal some instructive contrasts. While the total number of fires decreased 10.6 per cent, the number of lightning-caused fires increased 40.2 per cent. The decrease in man-caused fires was very marked, with a drop of 35 per cent. The number of campers' fires decreased 28.2 per cent, and this in spite of the fact that recreational use of the forests is growing by leaps and bounds.

Again, not quite nine-tenths as many fires were fought, at about one-third the cost; they covered one-sixth the area, and did one-twelfth the damage. The number of fires which burned less than one-fourth of an acre was considerably greater than in 1919, while less than one-third as many covered 10 acres and did over \$1,000 damage.

Any attempt at interpreting these data must take into account the great differences in the character of the two seasons. The general character and history of the 1920 season were summarized in last year's report. In contrast with the season of 1919, which both in length and severity was one of the worst that the West has ever known, it was short, but acute while it lasted. An unprecedented number of fires were caused by lightning, exceeding by 25 per cent the highest previous record.

Lightning fires are apt to be particularly hard to control, for two reasons: They occur most commonly in the high mountains, where they are hard to get at quickly, and they often occur in considerable numbers almost simultaneously, so that the protective force is taxed to the utmost to meet the strain without cracking. On one Forest in California—the Klamath—a series of storms

started 48 fires within six days, while on the Trinity a single disturbance in one day started 70, besides causing a number of others on neighboring forests. Under such conditions, to bring all the fires under control before they reach large dimensions is beyond human capacity with the present protective force and equipment. In district 6 (Oregon and Washington) practically all the fires requiring heavy expenditures to bring under control were lightning-caused.

The peak of the load occurred in district 1 (Montana and northern Idaho). Topography, climate and wilderness conditions combine to make the problem of fire prevention in portions of western Montana and northern Idaho well-nigh insuperable at the present time. In this district, almost always characterized by extreme summer drought, the precipitation for June, July and August was about two-thirds of normal. During the season there were 1,281 lightning fires—75 per cent of the total from all causes. And over 30 per cent of all the fires broke out within a single 10-day period.

A large outlay for fire fighting was inevitable under such conditions. Since the appropriation for fire fighting was only \$250,000, deficiency appropriations became necessary to replenish the general administration funds. Two such appropriations were made by Congress, totaling \$775,000. Fortunately, an exceptionally favorable spring and early summer, with late rains, resulted in expenditures in the latter part of the fiscal year far below what is normally required, so that at its close there remained an unexpended balance of \$50,000.

The 1921 season has continued, on the whole, favorable to the date of this report, and the expenditures for fire fighting have been decidedly below what must be looked for in years of normal hazard. Nevertheless, the fire-fighting fund for the fiscal year of \$250,000 has been exhausted and additional liabilities of approximately \$225,000 incurred. The greater part of the expenditures have been in Montana, Idaho and California.

A hazard of unique character was created by the tremendous blow down of timber on the west side of the Olympic Peninsula, in Washington. Something like 6,000,000,000 feet of timber are estimated to be on the ground, creating the most formidable fire trap the For-



est Service has ever had to reckon with. The bulk of the down timber is outside the Olympic National Forest, but if fire were once to get underway in this almost impenetrable mass of huge fallen trees its control would be practically impossible, and large losses would undoubtedly be suffered by the National Forest. To meet this situation the Forest Service, under authority of a special deficiency item, has cooperated with the State authorities and private owners in maintaining the most intensive protection ever attempted in the United States. This is mainly a matter of organizing the entire local public to eliminate all human causes of fire. It is something of a triumph to have come through the first and probably most dangerous season successfully.

During the past 11 years, 42,000 "man-caused" fires have started in the National Forests. These are more than two-thirds of all the fires with which the Forest Service has had to contend. In organizing for more and more efficient protection, it would be the height of folly to overlook the principal source of fire hazard, which lies in human ignorance or indifference.

The use of the National Forests for industrial and recreational purposes is rapidly increasing. Thousands of people now traverse or camp in the National Forests where there were but scores or hundreds six years ago. The annual number of man-caused fires is a barometer of the hazard occasioned by this enormous increase in the use of the Forests, a barometer which must be watched with the utmost care. If the number of man-caused fires increases proportionately with the use of the forests, the task of protecting them is well-nigh hopeless. From 1914 to 1917 there were from 4,300 to over 5,600 man-caused fires each year. Since 1917, while varying to a considerable degree, on account of climatic conditions, the movement has been downward. Last year approximately 3,000 fires were of human origin. While caution is necessary in drawing conclusions, it is probable that this result is due in part to the efforts of the Service in common with those of States and many private agencies to educate the public on the necessity for care with fire in the woods, to the increasing cooperation furnished by the press and by many commercial and semipublic agencies, and to a campaign of strict law enforcement against offenders.

There is no more important phase of fire protection than that of inculcating by every possible means the necessity for care in the use of fire on the part of every citizen and every industrial enterprise which uses or traverses the public forests. The forest fire evil, with its long train of costly destruction and emergency expenditure, can only be eradicated by public education. The proclamation of a "Forest Protection Week" by the President of the United States and by the governors of many States and the wide observance of this week, brought about through organized publicity and other educational efforts dealing with forest fires, were unquestionably of immense value.

Aside from attacking man-caused fires at the source, years of experience have only emphasized the truism that

effectiveness in protecting forests is measured by the speed with which fires can be discovered and reached. The efforts of the Forest Service are concentrated on rounding up all the big and little means of securing prompt discovery of incipient fires and quick action in reaching them. The main reliance for prompt discovery must be a lookout service, well distributed over peaks and other effective points and continuous during the daylight hours. The second essential is a network of telephone lines, inexpensively constructed by attachment to trees, so that the lookout can instantly communicate the alarm to the ranger, patrolman or guard who is nearest the telltale column of smoke. About 3,000 fires are thus put out on the National Forests every year before they reach a quarter of an acre in size. But fires may be fanned by heavy winds or may run in inflammable slashings or may be so inaccessible that they can not be reached quickly enough to be extinguished single handed, particularly if many fires are started simultaneously by a lightning storm or by a defective locomotive on an upgrade. Quick action must then be possible in mobilizing the available rangers and guards, in equipping them with fire-fighting tools and supplies of food, and in drawing upon local settlers, miners, stockmen and the crews of lumber camps for fire fighters. Such situations frequently occur and necessitate a warehouse and supply service whereby standardized equipment and foodstuffs can be furnished promptly in the quantities needed and an organization put quickly into action which extends from the base of supplies to the fire line, not unlike the organization needed for a military offensive.

Success in suppressing large fires in National Forests depends upon the completeness and perfection of this organization and its training in advance for dealing with every fire in every stage, with the utmost speed and without confusion or indecision. To bring its fire organization up to or near this ideal is the most important task of the Forest Service. It involves knowledge of technical appliances and methods and effective use of the crystallized experience gained in many years. Above all, it requires trained men who know the game. One of the outstanding needs of the Forest Service at the present juncture is to provide, even on a limited scale, for the systematic training of its field officers in the technique of fire control and suppression.

In recognition of the primary importance of an efficient fire organization, every possible effort has been made to increase the force of guards during the present fire season, at the cost of drastic cuts in other lines of work. With the appropriations made for the fiscal year 1922 it has been possible to add 68 men to the fire force in the four worst fire districts. The average forest ranger and guard in these districts, however, must still cover 52,000 acres. Experience has clearly demonstrated that this force is inadequate. Even during the average season, disregarding exceptional climatic hazards of frequent occurrence, it is not possible for the existing organization to reach and put out promptly a considerable number of fires which thereupon become large blazes and re-



quire heavy emergency expenditure. The loss in public property and in public funds from such emergencies, because the authorized force was too small to reach the fires in time, still continues. It will again be necessary to request Congress for a deficiency appropriation, because the fire-fighting resources provided in the regular budget were not adequate.

From the standpoint of appropriations, the outstanding need of the Forest Service in its business of protecting public property is to increase the summer guard force so that at least a larger proportion of the fires can be reached and extinguished when small and the necessity for emergency expenditures correspondingly reduced.

## FORESTRY AWAKENING IN WASHINGTON

By John D. Guthrie.

A CONFERENCE was held in Seattle on October 21, which may mean much to the future of the forests of the State of Washington. This was a forestry conference held under the auspices of the forestry committee of the newly organized State Development Bureau and convening in the Chamber of Commerce.

To Dean Hugo Winkenwerder of the School of Forestry of the University of Washington belongs most of the credit for inaugurating such a meeting of those most interested in the proper use and care of the immense forest wealth of the State. This conference is all the more significant because there was given wide publicity about a year ago, to a statement of a proposed forest policy for the State of Washington. Apparently the 1920 statement has not received the support of either the lumber interests or the officials of the State Forest School, or the business men of the State. The main characteristics of the 1920 statement might be said to have been a lack of a forward-looking view and an emphasis of self-sufficiency as far as the timber needs of the State, present and future, were concerned. The broad purpose of the October 21 meeting, as stated in the notice issued by the State Development Bureau, was to call together representatives of those most interested in forestry and the timber resources of the State and to agree upon the broad principles which should be considered in laying the foundation for a state forestry policy.

A comprehensive program was worked out in advance of the meeting. This program was made up of six main headings and the subjects under these were presented by representatives of the various agencies of the state most interested in formulating such a policy. Dean Winkenwerder presided at the meetings. The opening address, excellent in its breadth of view, was made by Col. Howard A. Hanson, chairman of the State Development Bureau. Dean Henry Landes of the College of Science of the University of Washington, presented a very comprehensive paper on "Land Classification in Washington", which was discussed as a problem fundamental to any forestry policy for the State. The subject of Forest Protection was covered by C. J. Joy, Secretary of the Washington Forest Fire Association, and then discussed by F. E. Pape, State Forester. "Needed Reforms in Forest Taxation" was presented by J. J. Donovan of Bellingham, followed by very full discussion by E. G. Ames, Prof. Frank J. Laube, of the Department of

Economics, University of Washington, and by F. B. Kellogg, U. S. Forest Service. The subject of forest taxation provoked very full discussion and this subject promises to be the most difficult one with which future conferences will have to deal. Prof. B. P. Kirkland, of the Forest School, University of Washington, followed with a very thoughtful and far-reaching paper on "Practicability of Forest Management on State and Private Lands." Discussion of this was taken up by Forest Supervisors W. G. Weigle and R. L. Fromme, Forest Service, with reference to the National Forests, and E. T. Allen, of the Western Forestry and Conservation Association, as to private forestry. A specially prepared paper by George S. Long on "A Suggested State Forest Policy" was read in Mr. Long's absence. This was discussed by E. S. Grammer and Dean Winkenwerder. It is understood that the addresses and papers will shortly be issued in printed form.

As previously announced this conference is planned to be followed by meetings of the committees and another formal conference a year hence, by which time it is hoped that the ideas and suggestions presented at the conference may have been crystalized into a definite forestry policy for the State. This proposed policy is then to be presented to the State Legislature at its convening in 1922, in concrete and definite form for legislative action. With approximately 15 per cent of the total remaining stand of the virgin timber of the United States and leading in the total annual lumber cut of the country since 1905 (except in 1914) and with a cut of 5,525,000 M. ft. B. M. for 1920, Washington may be truly said to have yet no forest policy, outside of an excellent forest fire law, that looks to the continuation of her high place in forest growth and lumber production.

This recent conference therefore has every indication of meaning much for the future. This prediction seems the more certain when one realizes the varied interests represented at this initial meeting. Representative lumbermen and loggers, men from the school of forestry, department of science and economics of the State University, the State Forester, the District Forester of the North Pacific District, the Secretary of the State Tax Commission, important members of the State Chamber of Commerce have thus come together in a sincere effort to work out a broad, comprehensive forest policy for this important State, a policy that will have for its object the continuous production of lumber and forest products for all time.



# AVENUE OF WORLD FRIENDSHIP GOOD

**M**EMORIAL Tree planting, that has carried the message of the trees into every city and town of the country, is another phase of the educational campaigns of the *American Forestry Association* that has met with hearty response on the part of the editors of the land. At this opening of a new year the association wants to extend all good wishes to the editors who have taken up this message of the trees and carried it on. Some of the editorial comment follows:—

*Washington Herald*: On the Lincoln Memorial grounds there is to be an international avenue of memorial trees. This is a mighty appealing conception and will be carried out under direction of Col. Sherrill, in charge of public grounds. At the head of the avenue will stand the two elms. Succeding trees will be the gifts of other governments and probably native of their countries. All who visit the grounds may walk this avenue of world friendship, an arbo-real league of nations.

It is quite appropriate that the elm was chosen as the American tree. It is as fully national as any of its habitats; it is long of life, is interwoven in more of American history than is any other tree and is distinctly a home tree. It is not militant. No one would speak of a sentinel elm. It is a tree of copious shade, of comfort and solace.

The planting ceremony was simple but impressive. The dedicatory address was made by Charles Lathrop Pack, president of the *American Forestry Association*, and Mrs. Harding assisted at the planting which was done by the American Legion. It was a feature of Armistice Week preceding the opening of the Washington conference and should be a good omen of releasing the grip of the sword to take the clasp of the hand.

*Chicago Post*: In the city of Washington two Armistice Elms are planted by the *American Forestry Association* on the grounds of the Lincoln Memorial, one elm for the Army and one elm for the Navy. It is understood that on Armistice day trees in memory of soldiers who fell fighting in the great war are to be planted in many cities, towns and villages of the country. Trees as memorials are more beautiful than anything in bronze or in stone, and, in addition they serve a useful purpose.

The rapid disappearance of the forests of the country is an old story. Every effort has been made to save the timber, which is necessary not only for building purposes but properly to distribute the rainfall. Until recently no real attempt to use our trees and to have them has been made. Now some of the lumber companies are replanting the

desolate tracts. A sense of the loss of the trees has come to the American people.

It would hurt nothing if every day of the year were the anniversary of some event in history which would promote tree planting. For every tree that is cut down in France another is planted. If something of the kind were done in this country posterity would benefit.

*Bethlehem, (Pa.), Globe*: This country will in years to come bless the *American Forestry Association* which immediately after the signing of the Armistice began a campaign for the planting of memorial trees. Organizations of all kinds welcomed the idea and especially in our own state the planting of these trees in many places where they were needed was taken up with enthusiasm. That memorializing those who helped the great war should take the form of planting trees is to be highly commended.

*Rocky Mountain News (Denver)*: The *American Forestry Association* must have faith in the pacific conference and the fruit that shall come forth from it, for it planted the shoots of two elm trees on the Lincoln Memorial grounds at Washington to commemorate the gathering.

If the conference succeeds, the trees will be there to bear testimony to generation following generation of the inception and the inauguration of the movement; if the conference fails, they will stand out as an irony upon the frailty of human kind and to mock the efforts of those who were called statesman in their day to get a little above the processes of the caveman.

The elm tree is a symbol of fraternity. The human family has taken to it kindly. It is stately, yet inviting. The poets love it. Longfellow wrote of it:

"And the great elms o'erhead

Dark shadows wove on the aerial looms,  
Shot thru with golden thread."

In Tennyson the elm tree is a favorite as it is of the English manor. The elm lives long. The trees planted to herald the possible dawn of world-peace will spread their branches with years-therein is their advantage over stone and metal, for memorials made of these begin to fade as soon as they are set in place, whereas the tree adds to its growth from year to year and becomes a benediction as it ages.

Something of good will come from the conference, we are sure, and the elms will not have cause to shrink or feel ashamed as the seasons go by.

*Montreal Herald*: Mere human art, no matter how great the genius of the artificer, cannot begin to compare with the art

of nature. There is something appealing in the latter which renders it far superior to anything of the kind in stone or metal or on canvas.

Cities and towns, nay, even villages, on this side of the Atlantic that have been bereaved of their sons in the world conflagration of the second decade of the Twentieth century cannot do better than to take a leaf out of a book of the gold diggers of Ballarat Australia and create memorial avenues, lined on either side, not by stone or bronze statues but by beautiful living maple or oak trees that will bear their names and that will develop and flourish with the growth of the country.

*Rochester Post-Express*.—An important meeting in the interests of municipal forests as a means of relieving the unemployment situation was held in Schenectady on Friday at which the principal speaker was Dr. Hugh P. Baker, executive secretary of the American Paper and Pulp association. Dr. Baker, in his address, stated that America needs the municipal forest not only to produce a valuable crop but to avoid the economic waste of idle land and at the same time to provide employment for large numbers of men.

It seems hardly credible that we have in the United States to-day approximately eighty-one million acres of loafing land, an acreage so cut over and burned that artificial restocking is necessary. And yet this land, if properly put to work, would provide enormous quantities of timber for our wood using industries. At the present time, there is pending in Congress, legislation initiated by the American Paper and Pulp association in cooperation with the American Newspaper Publishers' association, the American Forestry Association and other national organizations which would insure the nation's future timber supply.

In the state of New York, municipally owned forests have already been instituted but the movement is still in embryo. Newburgh, Malone and other cities throughout the state are annually planting municipal forests through the efforts of the school children on Arbor day. In the older countries of Europe the municipal forest system has been in existence for hundreds of years with the result that in the lean years of business depression idle men are given employment in planting, thinning and marketing at a profit to each municipality, the crop produced on these forests. It is a splendid plan and should meet with favor generally throughout the United States.

*Asheville Citizen*.—Forest reservations of the country are coming into their proper recognition by Congress. Representative Woodruff of Michigan is the latest Con-



# OMEN, SAYS WASHINGTON HERALD

gressional advocate for vast extensions to the network of highways that are eventually to make these reserves accessible to the American people. Mr. Woodruff's plan calls for the expenditure of 10 millions a year in building roads and trails, an investment which means better protection to the tremendous forest assets, more practicable marketing facilities for timber and more health and pleasure for the thousands who will spend vacations in the wooded places.

The people have long been indifferent to the destruction of the forests, and this apathy is not yet a thing of the past; but there is a growing appreciation of the material and cultural value of them that promises well for forest protection and recreational use of forests.

*Berkeley, California, Gazette:*—The American Forestry Association reports that the planting of memorial trees is going to break all records. The first big planting has been at South Bend, Ind., where the women of the county set out trees for all their soldier dead along the Lincoln Highway. It is a noble cause. In fact, it is two noble causes in one. Every soldier who laid down his life for his country deserves some such living memorial, which literally keeps his memory green. And every tree is more than a monument, benefitting the living while it honors the dead.

*Norwalk, Connecticut, Evening Hour.* Large numbers of trees have been planted in the past few years as memorials to the soldiers who gave up their lives in the World War. The idea is an excellent one and from the statement of the American Forestry Association to the effect that a large number were to be set out along the Lincoln Memorial Highway with the same object in mind it can be appreciated that the plan has made a favorable impression and that it is by no means too late to put it into effect.

*Troy, New York Times:* Charles Lathrop Pack, President of the American Forestry Association, who has long been identified with forestry, good roads and the conservation of national resources, makes an interesting statement with reference to the development of a campaign for memorial tree-planting. This, he says, has spread until it includes "roads of remembrance" and memorial parks in hundreds of places.

The memorial highway and memorial tree idea deserves hearty support and earnest cooperation by all who appreciate the significance of the movement. Great routes of travel, like the Lincoln Highway, the

would add to their beauty and attractiveness and serve as tributes to those who deserve such recognition. There would be peculiar appropriateness, for instance, in placing trees along the Roosevelt Highway and so expressing something of the spirit of a great American who was pre-eminently a lover of nature and of outdoor life. A highway lined with fine trees provides peculiar pleasure to every traveler, and memorial trees furnish reminders of eminent American men and women and thus become invaluable object lessons. Build more memorial highways and continue the planting of memorial trees.

*Butler, (Pa.), Citizen:*

A new scheme for memorials which should appeal to everyone is gaining in favor all over the country and threatens at some time in the near future to become a nearly national movement. It is the "Roads of Remembrance" idea which was originated by the American Forestry Association. As the automobile becomes more and more the method of business and pleasure travel, so will the demand for these beautiful roads mount higher and higher. Good roads are not the only demand of the present day; beautiful roads are also desired. Fine trees lining a highway increase the pleasure of an automobile trip and lessen the arduousness of a business trip.

*DeKalb, (Ill.), Chronicle:* Not only as a fitting memorial to those who died in the recent war, but also to beautify our highways, nothing could be done at a smaller cost to our country, than the planting of trees along the country roads. Nothing adds so much to the beauty of a road or so favorably impresses a visitor.

*New Haven Register:* One of the wisest things Governor Lake has done

in his public service is to recommend the adoption by the state of the plan of tree memorials for the soldier dead in place of the proposal of stone markers on the highways.

SINCE WE ARE CUTTING DOWN OUR TIMBER EACH YEAR SIX TIMES AS FAST AS IT CAN GROW—AND IT TAKES 300 YEARS TO GROW A GOOD SAW LOG —



ISN'T IT ABOUT TIME FOR US TO PLANT THE TREES FOR OUR GREAT, GREAT, ETC., GRANDSON'S BUNGALOW?—Darling, in the Washington Hera'd.

Roosevelt Highway, the National Highway, the Dixie Highway, the Jefferson Highway and various other roads and trails are already realities, and memorial tree planting



# CANADIAN DEPARTMENT

By ELLWOOD WILSON

In the discussion of forestry problems there has always been a lack of basic information as to the rate of tree growth yields per acre, and the best silvicultural methods to employ in handling woodlands. Foresters are much handicapped by not knowing what will happen in certain mixtures when some of the species are removed and it will require years of experiment to get at the facts. Great strides in the establishment of research stations are being made and the information already obtained is of great practical value. In Canada there are now research stations, with permanent sample plots, at Chalk River, Ontario, conducted by the Dominion Forestry Branch, at Bathurst, N. B., operated jointly by the Dominion Forestry Branch and the Bathurst Lumber Company, at Lake Edward, Quebec, by the Dominion Forestry Branch and the Laurentide Company, and at Iroquois Falls, Ont., by the Dominion Forestry Branch and the Abitibi Pulp and Paper Company. Next year the Dominion Forestry Branch will establish other stations in the West and the Quebec Forest Service will cooperate with the Dominion Branch and the Laurentide Company in establishing plots for the study of different systems of cutting in the Lake Edward District. A party of foresters has just visited the Chalk River Station on the Petawawa Military Reserve and found the work most interesting and very well planned and carried out. Plots have been established where poplar and birch which had come up on old burns is being cut out, for use in a match factory, the timber being cut by the buyer under the supervision of the station. Plots where different methods of selection cutting are employed where different amounts of thinning have been made, and probably, most interesting of all, where experiments are made to determine the conditions for influencing natural seeding. Plots have been selected where, under different degrees of shade, the mineral soil has been exposed to see if seed will take hold. The results of these experiments are positive and show that where the mineral soil is exposed germination is much facilitated. One of the most interesting things was the study which has been made of the growth of white spruce. In one stand, on thin soil on a rocky ridge, a tree was cut, measuring 23 inches on the stump and only 32 years of age. From data collected in many localities it seems that white spruce will be far and away the best tree to plant for pulpwood and it is probable that it will in a short period grow faster and yield more wood than even jack pine. This species, with its immunity to most diseases and its rapid growth on all sorts of sites will make an ideal tree for planting. There is a most comfortable house for the staff

at Chalk River in an ideal location for the work and much valuable information will be collected as time goes on.

A visit to the Harvard Forest School forest at Petersham, Massachusetts was also most interesting. Mr. R. T. Fisher has done much interesting and valuable work in forest investigation, especially along the lines of selective cutting together with some planting and a good deal of natural regeneration. All this work has been done on a commercial basis and has not only paid its way but has also resulted in a marked increase in the value of the property brought about by the removal of the less valuable species and the encouragement of the more valuable ones. The results of this work will soon be published and will be of great interest to all foresters and especially to those who are in charge of commercial forests.

Apropos of white spruce, a plantation of this species at Oakdale, Massachusetts on the Boston Reservoir area, in charge of Mr. Allardyce, covering about 27 acres shows a height growth of about thirty feet and a breast height diameter of about four inches. The trees are very uniform in height, very healthy, and well worth a visit from any one interested in growing spruce.

The Forest School of Toronto University under the direction of Dean Howe, shows the largest registration on record, 22 first year men, 13 second year, 10 third year, 12 in the graduating class and four special students.

A meeting of the Quebec Society of Forest Engineers was held in Quebec City on the 19th of December to which all the Provincial Foresters were invited.

A meeting of the Canadian Society of Forest Engineers was held in Toronto on the 27th of December, in connection with the meeting of the American Association for the Advancement of Science and that of the Society of American Foresters.

The aerial survey made by Dr. Swaine of the budworm damage to balsam fir in Ontario was most successful. The area affected was determined and also to a considerable extent the degree of infestation. In a few days flying information of very great value was obtained which could not have been acquired even through months of survey work on the ground. A very large area of balsam is affected and probably 99 per cent of the trees will be dead in three or four years. As the balsam is probably about 70 to 75 percent of the total coniferous stand the loss will be very serious. On this trip one of the planes was unable to get off a lake owing to hills close to the lake and had to be landed rather suddenly on the water, slightly injuring Mr. Arthur Graham, manager of the Ottawa Forest Protective

Association. The slat at the back of his seat struck his back rendering him helpless for two weeks and he had to be carried out of the woods, more than fifty miles on a mattress. He is now almost recovered. The plane was repaired and brought out.

The problem of the utilization of this dead balsam is a serious one. One large limit holder has enough of it to practically run his plant for ten years and long before that time it will have rotted and will be a total loss.

A questionnaire sent out by the Woodlands Section of the Canadian Pulp and Paper Association shows that of fourteen paper mills reporting four were doing experimental work on new or improved logging methods, three were experimenting with steam or gasoline tractors, two with power driven portable saws for use in the woods, two with mechanical loaders, all were willing to give the results of their experiments, and all were willing to discuss the project of assigning specific experiments to different companies the cost to be divided among all, or the project of establishing a central cooperative experiment station.

The Ontario Government has taken steps to set aside forest reserves in Pakenham and Darling Townships in Lanark County as municipal forests. The Town of Grand' Mere, Quebec, is also considering the purchase of a tract of land for a Municipal Forest.

The Dominion Forestry Branch has arranged to ship to the British Forestry Commission a much larger amount of tree seeds than heretofore. In the past the amount has been about 1,000 pounds per annum but this will be increased to a minimum of 3,000 pounds and it is hoped this will be further increased to almost double that quantity. The British Columbia species are giving splendid results in England which has a very similar climate. A plant for seed extraction is being built at New Westminster, British Columbia.

Very few people ever disturb the fire notices which are posted throughout the country printed in many languages including Indian syllabic writing. This summer in the West a ranger found one of these posters turned over and covered with Indian writing. As he could not read it he took it down and, fearing that it might be a message to the Indians to disregard the fire laws, showed it to several Indians asking them to read it. They only smiled and refused to interpret it. This made him more suspicious and he sent it to Ottawa. The Official Interpreter also smiled and wrote back telling him that it was a proposal of marriage from a "brave" who was too timid to propose in person.



## PLEASANT THINGS TAKEN FROM LETTERS TO THE EDITOR

"Your journal is an admirable production, written and illustrated in such a way as to compel people to read it. We have nothing quite like it in this country. May it continue to prosper, and help on the cause of afforestation."

M. B. HAVELOCK. England.

"I am indeed pleased to note the general rejuvenation of the cause of forest protection and development and think that AMERICAN FORESTRY has had a major part in arousing this sentiment."

THOMAS B. WYMAN.

"In my opinion, AMERICAN FORESTRY is one of the most interesting and valuable magazines published. The articles on plants, animals, and reptiles are especially interesting, and the work of conservation carried on by the Association, and promoted in its well edited magazine, deserves the support and cooperation of every thinking person in the country."

J. M. HEISER, JR.

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AXEL O. OXHOLM,

Chief Lumber Division, Department of Commerce.

"Your work in the past has been so instructive that I look forward to every issue of the AMERICAN FORESTRY."

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"It's a wonderful book and I couldn't get along without it."

QUENTIN R. HALLS.

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(Australia)

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MRS. J. H. TALBERT.

"I wish you success in the work of perpetuating our forests."

VINCENT S. STEVENS.

"The Forestry Club at the University is a subscriber, as well as many of the individual members, and the magazine is a distinct help to us in several of our Forestry courses."

REUBEN W. SMITH, JR.

"I want to express my appreciation of the very interesting articles by Dr. R. W. Shufeldt which have been appearing in AMERICAN FORESTRY. I always read them with great interest and with keen enjoyment."

ELMER LEWIS KAYSER,

Secretary, George Washington University.

"I shall never cease to desire membership in the Association."

GLENWOOD E. JONES.

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HOWARD F. ADAMS.

"American Forestry seems more interesting than ever!"

MARY D. HUSSEY.

"Wish every farmer would take your magazine. These dry days when forest fires are common everywhere I do my best to see that they are put out, and if only people would just read your magazine they would learn the value of our forests."

NICK B. BODDIE.

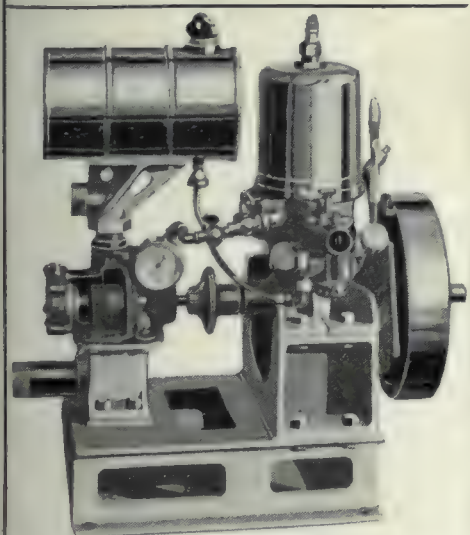
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**PINE BEETLES FILMED**

Saving western pine forests from its insect enemy, the western pine beetle, is shown in a new one-reel motion picture produced by the United States Department of Agriculture. The new film, entitled "Fighting Western Pine Beetles", is a graphic story of the work of the Bureau of Entomology of the department in controlling this pest, which annually causes great destruction among valuable timber. The fact that the insects concentrate in certain trees affords practically the sole important means of combating it. The beetle works under the bark, girdling the tree with a maze of passageways, which in time kills even the biggest timber. In one scene, for instance, is shown a forest giant 230 feet high and 84 inches in diameter, killed by a mass attack of the pests. The department maintains control camps in various sections where the pest is particularly bad. It is the work of the men of the camp to keep a sharp lookout for trees infested with the beetle. Tiny holes in the bark usually betray the presence of the marauder. There are two methods of destroying the pest—one for dry weather and one for other seasons. In either case the tree is felled. In the dry season, the limbs and bark are stripped off and all, including the log itself, exposed to the sun for several days. The bark, it seems, absorbs heat to 130 degrees, which is enough to kill the beetle in the larval stage. At

other seasons the stripped bark and limbs are piled along the trunk and burned. This kills the insect without damaging the log.

**NEW YORK'S FOREST FIRES**

The 1921 fire chart of the Conservation Commission shows the progress that the State has made in reducing the amount of forest fire losses through the development of its fire protective system.

The season just ended was the worst in many years, not only in this State, but in other eastern states and in Canada. There were more fires this year than in any previous season of the thirty years for which records are available, but the losses were trifling in comparison with other years, as the result of the promptness and efficiency with which they were controlled.

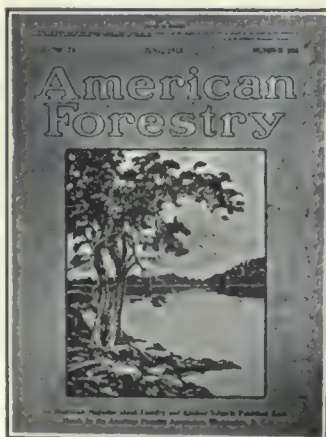
With a total of 720 fires, the total loss amounted to \$49,920, as compared with \$850,000 from 645 fires in 1903, and \$800,000 loss from 600 fires in 1908, before the present system of fire protection was established.

During the time when forest fires were burning last spring and through a large part of the summer, there were days and days of high winds which made it almost impossible to bring them under control.

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### WHITE PINE BLISTER RUST FOUND IN PENNSYLVANIA

For the first time since the white pine blister rust was discovered in America, infections on currant and gooseberry bushes were found this fall in Pennsylvania. The original discovery was made by a United States Department of Agriculture blister rust investigator in Wayne County. The significance of this discovery lies in the fact that white pine blister rust is spread from pine to pine only through the medium of currant or gooseberry bushes. While some blister rust has been found on planted pines in Pennsylvania, they were brought in from Europe in a diseased condition. These infected trees were destroyed before currant and gooseberry leaves became diseased, thus eliminating the danger of the blister rust attacking healthy pines.

Extensive work has been done in New England and northern New York the past summer to organize movements for eradication of the death-dealing bushes within 300 yards of white-pine trees and stands. Such work protects the trees from the disease for a period of years, but both wild and cultivated currant and gooseberry bushes must be destroyed within the 300-yard zone. Owners of fine stands of white pine often have been reluctant to believe danger exists through the proximity of the bushes, but once demonstration has been made, they become active in rooting out the offending shrubs. Infestations as high as 46 per cent of the pines have been found on some properties in New England and New York. White pine is well recognized as one of the most profitable crops that can be grown on the poorer soils of the Northeastern States.

### DAMAGE BY THE SATIN MOTH

The advisability of quarantining the States of New Hampshire and Massachusetts to check the spread of the satin moth, a dangerous insect pest newly discovered in this country is being considered. Quarantine action, if decided upon, would prohibit or restrict the movement of the insect's principal carriers, poplar, willow, and related plants, from these States, or from any districts in them found to be infested with the pest, into other States and Territories. The satin moth, so called from its white, satin-like appearance, occurs throughout Europe, and is particularly an enemy of poplar and willow. It was first reported in this country about July 1, 1920, in the Fellsway district north of Boston, but from its distribution and abundance, as later determined, it is thought that it then had undoubtedly been in the United States for several years. It has not been possible to determine the source of its introduction, but the department thinks it probable that the insect was brought in with some importations of willows or poplars.

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viduals who have planted, or who contemplate the planting of Memorial Trees, or who are interested in the national plans for Roads of Remembrance, are invited to write to us for information.

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## SCHOOL IN YELLOWSTONE PARK

On Monday, October 10, the first public school for children in Yellowstone National Park was opened at headquarters with 14 children of Government employees in attendance. One of the rooms of the former Post Exchange Building of old Fort Yellowstone was remodeled by the Government and set aside for school purposes but this was as far as the park officials could cooperate towards providing school accommodations. The parents of the children are sharing the cost of the service of the teacher.

# BOOKS ON FORESTRY

AMERICAN FORESTRY will publish each month, for the benefit of those who wish books on forestry, a list of titles, authors and prices of such books. These may be ordered through the American Forestry Association, Washington, D. C. Prices are by mail or express prepaid.

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# DISSTON

## NEWS FOR LUMBERMEN



Published Occasionally HENRY DISSTON & SONS, Inc., PHILADELPHIA, U. S. A. January, 1922

### Why YOU Should Use Disston Saws

**A Few of the Reasons for Disston's 80 Years' of Leadership.**

**D**ISSTON Saws are manufactured completely in the Disston factory.

**D**ISSTON workers are, for the most part, expert craftsmen. A great many of them have grown up—in many cases have followed their fathers—in the Disston factory and are truly experts in saw-making. Eighty men in the Disston factory have worked here more than 40 years!

**T**HE steel used is made in the Disston Works—within the factory wall—because to insure constant good quality, it is necessary to control absolutely the quality of all steel used.

**Y**OU have undoubtedly heard of Disston-made Saw Steel. It is known for its good quality wherever saws are used. This is because it is made from a Disston formula which many years of experimenting have shown gives the best saw steel.

**D**ISSTON Saws are uniformly and properly hardened and tempered. The processes by which this is done were developed by Disston and are used exclusively by Disston.

**D**ISSTON Saws are ground by a special method which gives a thickness and taper to the saws that is exceptionally accurate and uniform.

**T**HESE are some of the reasons why every Disston Saw is a good saw. They are also reasons why so many users have found that it pays to specify "Disston."

### Let Us Send You The Crucible

**T**HE House of Disston publishes a monthly magazine. Did you know that? This magazine, "The Crucible," is a magazine for lumbermen.

It contains stories of successful lumbermen in all parts of the country. It carries write-ups of interesting operations. It often has an article on some special phase of saw sharpening or repairing. There is a page of jokes which is the equal of any.

We will send you this magazine—free of charge—if you would care for it. All you have to do is ask for it. Drop us a post card with your name and address on it and say, "Please put my name on the Crucible Mailing List." Do it today—you'll like it.

### Things Not to Do in Operating a Saw

**T**HE following is a list of "don'ts" for the saw operator that are taken from the "Disston Lumberman's Hand Book." Many readers have told us that a list of this kind was a time-saver for them and we print it here in the hope that it will be of value.

#### DON'T USE—

- Insufficient power to maintain regular speed.
- Too thin a saw for the class of work required.
- Too few or too many teeth for the amount of feed carried.
- Weak or imperfect collars.
- Collars not large enough in diameter.
- Ill-fitting mandrel and pin holes.
- Uneven setting and filing.
- Points of Teeth filed with a "leal"—not square across.
- Too little set for proper clearance.
- Too much pitch or hook of teeth.
- Irregular and shallow gullets.
- A saw out of round and consequently out of balance.
- A sprung mandrel, or allow lost motion in mandrel boxes.
- A carriage track neither level nor straight.
- A carriage not properly aligned with saw.
- A journal which heats.
- Guide-pins too tight or not properly adjusted.
- Teeth which have backs too high for clearance.
- Any saw too long without sharpening.

### SPEED!

"Near Stevens Point, Wisconsin, on September 19th, 1920, two men using a Disston High-Grade Cross-Cut Saw cut through a Grey Elm log, 18½ inches in diameter in 15 seconds."

**W**E do not hold up this example of fast cutting as a record. It is just one instance that we know of and may not be a record accomplishment. But it does illustrate what our statement that the combination of the famous Disston-made Steel, Disston manufacturing methods, the latest improvements in cross-cut saw design, and Disston workmanship (developed through 81 years of experience) means to users of cross-cut saws.

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#### "The Saw Most Carpenters Use"

- Back Saws
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- Bevels
- Buck Saws
- Butcher Saws and Blades
- Circular Saws for Wood, Metal, and Slate
- Compass Saws
- Cross-cut Saws and Tools
- Cylinder Saws
- Drag Saw Blades
- Files and Rasps
- Grooving Saws
- Gauges—Carpenters' Marking, etc.
- Hack Saw Blades
- Hack Saw Frames
- Hand, Panel, and Rip Saws
- Hedge Shears
- Ice Saws
- Inserted Tooth
- Circular Saws
- Keyhole Saws
- Kitchen Saws
- Knives—Cane, Corn, Hedge
- Knives—Circular for Cork, Cloth, Leather, Paper, etc
- Knives—Machine
- Levels—Carpenters' and Masons'
- Machetes
- Mandrels
- Milling Saws for Metal
- Mitre-box Saws
- Mitre Rods
- One-man Cross-cut Saws
- Plumbs and Levels
- Plumbers' Saws
- Pruning Saws
- Re-saws
- Saw Clamps and Filing Guides
- Saw Gummers
- Saw-sets
- Saw Screws
- Screw Drivers
- Screw-slotting Saws
- Segment Saws
- Shingle Saws
- Slate Saws—Circular
- Squares—Try and Mitre
- Stave Saws
- Sugar Beet Knives
- Swages
- Tools for Repairing Saws
- Tool Steel
- Trowels—Brick, Plastering, Pointing, etc.
- Veneering Saws
- Webs—Turning and Felloe

This is a partial list. There are thousands of items in the complete Disston list.

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## BOOK REVIEWS

**DOWN THE COLUMBIA.** By Lewis Freeman (Dodd, Mead & Company).

A graphic account, by an author to whom adventure is no new story, of a trip from source to mouth of the Columbia. Though one of the world's largest and best-known scenic rivers, this is the first record that has been made of any trip from its glacial sources to tidewater, and it is packed with interest and thrills. The story is well illustrated with many photographs taken along the way.

**WESTWARD HOBOES,** by Winifred Hawkrige Dixon (Scribner's) New York, \$4.00.

Well characterized as the "ups and downs of frontier motoring" this is the story of two American girls who decided to rough it and see the country in a purposeful way. They shipped their car to Galveston and motored from there up through the Rio Grande country, north through the Rockies and then home by way of the northern States, following roads where road were offered but where they were not, blazing the trail to their objective. They had a wonderful trip and tell of it delightfully. One acted as official photographer and is responsible also for the unique map of the journey shown on the lining paper.

**THE EDGE OF THE JUNGLE,** by William Beebe, N. Y., (Holt) ..\$2.50.

With the great interest which now dominates the world in books of travel to distant lands and seas, this delightful story by Mr. Beebe, following his "Jungle Peace", will be received with welcome and accorded a place of distinction by all book lovers.

**Forest Mensuration,** by Herman Haupt Chapman—(Wiley—New York). \$5.00.

This book contains a thorough discussion of the measurement of the volume of felled timber, in the form of logs or other products; the measurement of the volume of standing timber; and the growth of trees, stands of timber and forests. It is designed for the information of students of forestry, owners or purchasers of timberlands, and timber operators. The subject matter so treated is fundamental to the purchase or exchange of forest property or of timber stumpage, the valuation of damages, the planning of logging operations, and the management of forest lands for the production of timber by growth.

It is intended as the successor of Graves' *Forest Mensuration*, and was undertaken at the request of the author, H. S. Graves, whose original text, *Forest Mensuration*,

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appearing in 1906, set a standard for textbooks in forestry and has been of inestimable value to foresters and timberland owners in America. The present text is not a revision of the former publication, but an entirely new presentation, both as to arrangement, methods of treatment and much of the same subject matter.

**A Text Book of Wood,** by Herbert Stone—(Rider—London).—\$5.00.

This book was written to provide a class-book for advanced students and to gather in a condensed form under one title all the many scattered morsels of information

about wood which are to be found in works which treat of it as a secondary matter, as in botanical works. It is highly useful for its special purpose and a valuable compilation of necessary facts and information.

The American Geographical Society has issued a booklet of exceptional merit entitled "*Palisades Interstate Park*." The charming style of the author, Dr. R. L. Dickinson, is one that must appeal to every lover of nature and the beautiful pen sketches and panoramas represent a very high standard of illustration.



## STOPPING FOREST FIRES

Gifford Pinchot, Chief Forester, of Pennsylvania, has made the following comment on the forest fire season in Pennsylvania during the fall of 1921:

"The people of Pennsylvania are getting their money's worth from the million dollars appropriated last spring by the Legislature to put down forest fires. Half of the million is being spent during the present fiscal year. This is what is being done with it, and here are some of the results:

"Fifty new steel towers, most of them sixty feet high, have been erected at the best observation points throughout the State. Every tower was completed and connected by telephone with men organized into effective fire fighting crews before the fire season began. An entirely new system of fighting forest fires, pronounced by the U. S. Forest Service to be the best in existence, was devised and installed. Fire wardens and other fire fighters were equipped with fire tools, among them a new combination rake and bush-hook superior to anything yet invented.

"Before the fall forest fire season opened, the Department was ready to meet it. The best way to get an idea of the results accomplished is to compare them with the average fall fire season during the previous five years.

"The average number of fall forest fires that started during the last five years was 254. In 1921 there were 197. The average area burned over in the five years was 21,564.73 acres a year. In 1921 it was 4,085.68, or less than one-fifth.

"You cannot keep all fires from starting, but you can handle them promptly and effectively after the start. The best test of a forest fire organization is the average size of the fires. The smaller the size the better the work. From this point of view it is worth noting that the average size of fires in the fall for the previous five years was 84.9 acres, while the average acreage per fire in 1921 was 20.73, or less than a quarter.

"If we compare the results in 1921 with the best fall in the previous history of the Department, a fall of such exceptional weather conditions that only 81 fires were reported as against 197 last fall, we find that less than two-thirds of the area was burned over, while the average per fire was only one-fourth.

"I am very proud of the men who have brought these results about. They have proved themselves worthy of the confidence the people of the State, through the Legislature, have reposed in them. It is no more than fair to say that they are giving the State a dollar's worth of work for every dollar the Department of Forestry is spending.

"The job of stopping forest fires is well begun. We have proved that it can be carried through if the next Legislature will give us the money to do it. In the meantime, it is some satisfaction to know that the State is not only getting what it paid for, but that increased forest growth will pay it all back."

## FORESTS AND STREAM FLOW

Investigation of the effect of forests upon stream flow is being made jointly by the Forest Service and Weather Bureau of the United States Department of Agriculture, at a station in the comparatively light forests of the Colorado Rockies. "When completed," says the department, "this investigation will furnish information of great value and significance for this and similar sections of the United States where agricultural development is dependent upon stream flow for irrigation."

Somewhat similar work has been done in Europe, notably at Zurich, Switzerland. Observations, extending over 18 years, were made upon two small watersheds, one wholly, and the other one-third, forested.

"On a proportional basis," the Forest Service says, "the total annual stream discharge was approximately equal on the two Zurich watersheds. In short, heavy rain-falls the maximum run-off per second in the forested watershed was only one-third to one-half that on the lightly forested watersheds, and the total flood stage discharge usually one-half. Although, as a result of very long, heavy rains, the run-off was the same after the forest soil had become saturated, the forest cover appreciably stabilized the stream flow and reduced the extremes of both high and low water. The forest cover was also beneficial in preventing landslides, which were common on steep, unforested slopes during heavy rains, and in preventing erosion, which greatly increases flood damage throughout the entire course of streams."

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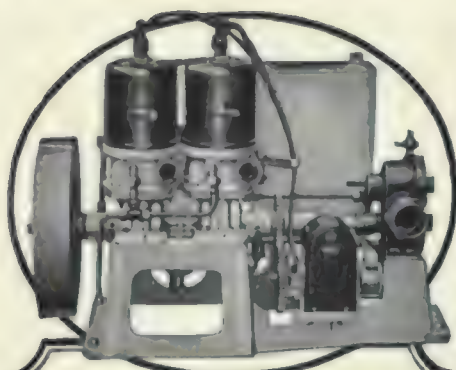
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## NATIONAL FOREST FOR PENNSYLVANIA

A new National Forest, to be created on the headwaters of the Allegheny River in Pennsylvania, according to an announcement of the Forest Service, United States Department of Agriculture, will minimize the danger of destructive floods in the river which have caused losses amounting to millions of dollars in the past. This river is one of the most important navigable streams in the State, and is subject to sudden floods. By perpetuating the forest areas and restocking the cut-over lands of this watershed the danger of erosion and of destructive floods will be lessened. Tracts of land comprising 412,000 acres in Warren, McKean, Forest and Elk Counties, have been approved for purchase by Federal officials, and will be known as the Allegheny National Forest. This purchase marks the first application in Pennsylvania of the "Weeks Law" under which lands on 17 purchase areas, totalling 2,000,000 acres, have already been acquired in the White Mountains, Southern Appalachians and Ozarks. The National Forest Reservation Commission, formed under this law, approved the location for purchase of 1,080,000 acres in Pennsylvania and 62,000 acres in New York. This latter area was subsequently excluded from the program upon New York's adopting the plan of turning the land into a State park.

## ALASKAN PULP WOOD FOR SALE

Two billion feet of Alaskan pulp wood, the largest amount of National Forest timber ever offered for sale, is described in a prospectus recently issued by the Forest Service, United States Department of Agriculture. The timber is within the Tongass National Forest, on the west side of Admiralty Island, and covers about 90,000 acres with a frontage of 48 miles of navigable water, and 24 miles by boat from Juneau and 900 miles from Seattle. Four-fifths of the timber is western hemlock and one-fifth Sitka spruce, both of which make excellent grades of paper, as has been demonstrated by the mills of Oregon and British Columbia.

The sale period will be 30 years, and a large plant will be required to utilize all the timber within that time. The sales contract requires that a pulp manufacturing plant of not less than 100 tons daily capacity shall be established in Alaska by the purchaser within 3 years. This section of Alaska has many unappropriated power sites of suitable capacity for large pulp and paper plants.

The need of developing our pulp industry is emphasized by forestry experts who point out that although prior to 1909 all the paper consumed in this country was manufactured here, in 1920 two-thirds of the news print used in the United States was made from timber grown on foreign soil. Reduced to dollars and cents this represents an annual payment of \$191,000,000 for pulp wood, wood pulp and paper which this country has been obliged to import due to lack of raw material available to existing pulp mills. A partial solution of this problem, foresters say, lies in establishing pulp mills in Alaska, where there is now a large supply of spruce and hemlock, and where wood can be grown at a rate sufficient to furnish indefinitely one-third of the present American news print requirements.

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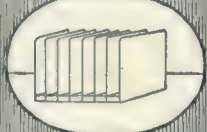
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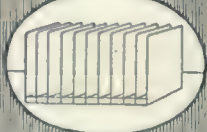
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## 1922 IDAHO FORESTER STAFF

The staff for the publication of the 1922 IDAHO FORESTER was elected at a recent meeting of the Associated Foresters of the School of Forestry at the University of Idaho. W. Byron Miller, of Stevenson, Washington was elected Editor-in-Chief and Leslie E. Eddy of Dietrich, Idaho, Business Manager. George J. Madlinger of Poughkeepsie, New York and Jack W. Rodner of Moscow, Idaho were subsequently appointed as Associate Editors and Russell Parsons of Moscow, Idaho, as Assistant Business Manager.

The newly chosen staff has actively begun to push the work on the annual publication of the Idaho School of Forestry and the book promises to be of more interest to lumbermen and foresters throughout the northwest as well as to those associated with the university than ever before.



## SMOKERS AND FOREST FIRES

From reports received at the District Forester's office, a total of 100 forest fires in Oregon and Washington during 1921 were due to smokers. These reports are from only thirteen of the twenty-two National Forests but indicate, forest officers say, that a far greater percentage of forest fires the caused each year by cigarette and cigar stubs and matches than is generally supposed.

The Okanogan Forest reports that 39 per cent of their fires were due to smokers, while 16 fires on the Crater Forest which cost \$225 to put out started from smokers' cigarette stubs or unextinguished matches. The Whitman Forest states that 21 fires on that forest were due to smokers. The Colville Forest reports that it cost \$874 to put out 10 fires starting from smokers, while the Olympic Forest had only one smoker's fire but that cost \$68 to extinguish.

A tobacco firm in Canada recently adopted the novel plan of making each package of its cigarettes preach a sermon against forest fires. Neatly tucked away amid its aromatic contents is a small red slip on which these words are printed:

"Please don't throw away a lighted cigarette. See that it is dead out.

"Lighted tobacco and matches are especially destructive in the forests.

"Living forests mean liberal employment; dead forests employ nobody.

"Don't be responsible for a dead forest.

"This caution is printed as a contribution to the forest conservation movement."

Americans, seeing these little red slips have been heard to wonder why similar action has not been taken by the United States tobacco manufacturers, especially in view of the large number of fires caused yearly by careless smokers.

Cigars and cigarettes consumed every single day in the year, if placed end to end, would reach from the Atlantic to the Pacific and back again; 80,777 cigarettes and 13,835 cigars are burned to ashes for every minute of the 24 hours. The combined total lengths of cigars and cigarettes smoked annually in the United States aggregate almost 2,275,000 miles—over six times the total mileage of the nation's railroads.

## KILLING FLIES OF WALNUT HUSK-MAGGOT

Experiments in the control of the walnut husk-maggot, a serious enemy of the black walnut, have been conducted with success by the Bureau of Entomology, United States Department of Agriculture. The results of the work accomplished as far as it has gone are now published by the department in Department Bulletin 992, entitled the Walnut Husk-maggot, by Fred

E. Brooks. The habits and life history of the insect have been determined sufficiently to allow the study of control measures, which have been conducted successfully in two important black-walnut groves.

A lead-arsenate spray was used in both instances, with the result that in one grove a count of the nuts showed that 4 per cent had been attacked by the maggots, compared with 60 per cent destruction the year before. In the other the condition was estimated as 75 per cent better than during the previous season. Flies confined in roomy wire-screen cages were observed to feed freely on sweetened water, to which sufficient lead arsenate had been added to give the liquid a milky color. They, however, succumbed slowly to the poison, and further tests are thought advisable before this treatment can be fully recommended.

## LUMBERMEN ENDORSE FOREST POLICY

The Concatenated Order of Hoo-Hoo composed of lumbermen representing all sections of the United States has vigorously endorsed the national forest policy movement in the following set of resolutions:

WHEREAS: The perpetuation of the timber supply of the United States is of vital importance to the country, and

WHEREAS: The timber is being denuded much more rapidly than it is being grown, it is imperatively demanded that a National Forest Policy be at once inaugurated which will provide for a survey of the present timber area of the various states, and also of the denuded and idle lands, with the view of their re-forestation either by private individuals, state or national governments.

THEREFORE, BE IT RESOLVED: That the Concatenated Order of Hoo-Hoo pledges its best efforts toward enlisting the cooperation of each state and the national government in securing the adoption of such policies as will ensure an adequate supply of timber for the nation's needs, and

BE IT FURTHER RESOLVED: That one of the most essential steps in forest conservation is protecting the young and mature timber from fires, and therefore the members of Congress should be impressed with the necessity of providing adequate funds for the Forest Service in order to reduce to the minimum the fire hazard, insect and other destructive causes. Hoo-Hoo believes that a tree saved from fire equals a tree produced.

The work of the Forest Service Laboratory at Madison, Wisconsin, is entitled to the support of the entire industry, as its research work is of great value to the lumber users of the country, and Hoo-Hoo unqualifiedly commends its work.

## ATTENTION, FORESTERS

AMERICAN FORESTRY will print, free of charge in this column, advertisements of foresters wanting positions, or of persons having employment to offer foresters. This privilege is also extended to foresters, lumbermen and woodsmen, discharged or about to be discharged from military service, who want positions, or of persons having employment to offer such foresters, lumbermen or woodsmen.

### POSITIONS WANTED

POSITION wanted as Forester or Superintendent on a private estate or otherwise, by a thoroughly practical, experienced, married man. English. Competent to take charge of any foresters' post in every detail. Can undertake the control of a saw mill; building roads, nursery work, landscape planting, tree work, and handling help. Good references. Address Box 3040, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (1-3-22)

FORESTER—Experienced in cruising and general woods work, also Aerial Photograph Interpretation, would like position with Pulp or Lumber Company. Address Box 3045, in care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (1-3-22)

MARRIED MAN would like position as CITY FORESTER or in charge of large private estate. Any forestry position will be considered as a change in locality is desired. Have had technical training and recently graduated from one of the foremost forestry schools of the country. Ex-service man, having spent three years in the service. Address Box 3020, care AMERICAN FORESTRY Magazine, Washington, D. C. (9-11-21)

CITY LANDSCAPE ARCHITECT AND FORESTER, thoroughly conversant with Southern conditions, desires to change. Correspondence invited. Address D, care AMERICAN FORESTRY Magazine, Washington, D. C. (9-11-21)

EX-SERVICE MAN; age 30; married; two and one-half years in forestry college; experienced in city forestry, nursery work, tree surgery, dynamiting and in handling men; wishes position in city forestry or park department any where in northeastern United States. Now employed. Address Box 3025, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (10-12-21)

WINTER POSITION wanted with lumber company as time keeper or similar work. Graduate of high school and ranger course, 25 years old, good references from previous employers. Address Box 3030, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (10-12-21)

FORESTER—Graduate of Penn State, 28 years of age, desires work in Forestry or allied lines. Varied experience in Forestry and lumbering. Served with 10th Engineers and with Wood Supply Branch in France. Will consider any outdoor work with a future. Address Box 3035, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (10-12-21)

### WANTED

FORESTERS, UNEMPLOYED OR EMPLOYED, having executive ability and possessing the gift to lead others, to write us. Great opportunity for those that qualify. State age, —reference—(2) if employed. School graduated from (years). Confidential. Rangers also answer this. Address Box 66-66, AMERICAN FORESTRY MAGAZINE, Washington, D. C.

CITY FORESTERS—The Oklahoma Forestry Association, in order to assist cities and towns in Oklahoma to procure men with technical training and practical experience in city forestry work desires names of qualified men. Please send name and address, giving age, training and experience to the Secretary, THE OKLAHOMA FORESTRY ASSOCIATION, Stillwater, Oklahoma.



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## NATIONAL PARK SERVICE FOR 1921

In his annual report to the Secretary of the Interior, Albert B. Fall, covering the 1921 travel season to the national parks, Stephen T. Mather, Director of the National Park Service, places the national parks at the head of those worth-while things in our national life that make for better citizens, since they provide healthful diversion, recreation and enjoyment and offer unequaled advantages in educational fields. Travel to the national parks and monuments under the jurisdiction of the National Park Service has exceeded all preceding records, amounting to the tremendous total of 1,171,797 persons or 113,342 persons more than visited these areas last year. Travel has increased to this total in 6 years from the 356,097 visitors recorded in 1916.

Strange as it may seem it took the World War to impress this country with the realization of its great scenic treasures. European ports were closed to pleasure travel not only during the war days but for a period after its cessation and when our active share in the conflict was successfully ended and the time had come for relaxation, tired minds and bodies turned to the national parks for recreation and pleasure. At once park travel leaped to unprecedented figures. The park tourist facilities were overwhelmed, but still the crowds came. Returning to their homes visitors spread the glories of the parks far and wide, inspiring others with the desire to also see these wonder places which they had seen.

The total area of the 9 parks is 10,859 square miles or 6,949,760 acres and the area of the 24 national monuments is 1,815 square miles, or 1,161,600 acres, a property valued at many tens of millions of dollars. There is one national park in the Hawaiian Islands and one in Alaska. Only one national park, the Lafayette, lies east of the Mississippi. Two of the monuments are located in Alaska while the others are located in the United States proper west of the Mississippi.

The annual cost to the Nation for the upkeep of these areas has been extremely small; this last year the total Congressional appropriations amounted to \$1,402,200. Of this amount, however, \$315,000 was for new road projects. Revenues derived from the operation of the parks amounted to \$396,928.27.

## FOREST RECREATION

Forcibly presenting the fact that forest recreation is a genuine, universal forest utility, and that as such its recognition is becoming general, strong resolutions were recently adopted by the American Association of Park Superintendents in annual convention at Detroit.

## MONEY FOR NATIONAL FOREST ROADS

"The signing by the President of the Federal Highway Act, appropriating \$15,000,000 for forest roads and trails, makes available at once \$758,913 for national forest roads in Oregon, Washington and Alaska and marks an important step toward the development of the great resources of our national forests", states Geo. H. Cecil, district forester of the North Pacific District.

The act appropriates \$9,500,000 for forest roads of primary importance to the States, counties, or communities within, adjoining, or adjacent to the National Forests. Of this amount \$2,500,000 is made immediately available for apportionment based on the area and value of the land owned by the Government within the National Forests. As heretofore the construction work will be done by the U. S. Bureau of Public Roads, in cooperation with the Forest Service. This distribution by States has been made by the Secretary of Agriculture.

The appropriation for the construction of maintenance of roads and trails of primary importance for the development and protection of the National Forests is \$5,500,000, of which \$2,500,000 is immediately available. The act prescribes no mathematical apportionment of this amount, but states that it shall be according to the relative needs of the various National Forests.

One new feature of the bill is that the cooperation of Territories, States, and civil subdivisions thereof is liberalized far more than in previous acts, in the expenditure of appropriations for National Forest roads. The law, as heretofore permits the Secretary of Agriculture to receive cooperation, and Forest Service officials believe that undoubtedly considerable amounts will be offered, thereby augmenting forest road construction.

## HEADING BEECH TREES LOW

IF beech trees are headed low there will be less opportunity for lovers and jack-knife vandals to mutilate the bark with crude art, the United States Department of Agriculture suggests. Beeches and birches suffer most by the aimless jack-knife. If landowners realized that this objection could be overcome easily by training the limbs low, the trees would be greater favorites.

## A FRIEND IN NEED, IS A FRIEND INDEED

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# AMERICAN FORESTRY <sup>65</sup>

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WASHINGTON, D. C.

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## CHANGE OF ADDRESS

A request for change of address must reach us at least thirty days before the date of the issue with which it is to take effect.  
Be sure to give your old address as well as the new one.

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# "THE HALL OF FAME FOR TREES"



(Photograph by Frances Benjamin Johnston)

## THE TREATY OAK

*This splendid oak tree stands on the grounds of the Woman's National Foundation in Washington, D. C., having given the name of "Oaklawn" for generations to the estate that owned it. A magnificent specimen of its kind, it has a diameter of from seven to nine feet at the thickest part of the trunk, and is said to be several hundred years old. Though the Foundation intends shortly to erect a group of buildings on this site, the oak tree will be preserved, the Board of Governors having declared that they want it kept as a symbol of the enduring*

*strength which the infant Foundation is expected to attain. Tradition connects the tree closely with the early history of Washington and claims that under this oak, which stands on a hill commanding the approach to the city, foregathered the Indian Chiefs to draw up the treaty which ended forever the bloody strife between the whites and the redmen in this vicinity. It was nominated for the Hall of Fame for Trees with a History last September by Mrs. Clarence Crittenden Calhoun, the president of the Woman's National Foundation.*



# AMERICAN FORESTRY

VOL. 28

FEBRUARY, 1922

NO. 338

## THE VANISHING TRAIL

By Arthur Newton Pack

European Commissioner of the American Forestry Association

This, the third of the series of articles written by Mr. Arthur Newton Pack, who, as Commissioner for the American Forestry Association, visited European countries to study forestry conditions, describes the aftermath of cuttings in France by the Twentieth (Forestry) Regiment. In the March issue of American Forestry there will be an article by Mr. Pack on conditions in Germany.—Editor.

MOST of us at one time or another have witnessed the dreadful aftermath of lumbering operations in America; a tangle of discarded trunks, tops and branches with pillar-like stumps projecting through, a raging conflagration, and then that utter desolation which can only be compared with the European battlefields. But if one sets out to view the cutting of the 20th Regiment of American Engineers (the Forestry Regiment), in France with such a picture in mind, he is due for a decided surprise. It is a long trail, the pursuit of that particular branch of the A. E. F., and its markings are growing continually harder to find, particularly without the guidance of such men as Colonel W. B. Greeley or Colonel Henry S. Graves, who helped to make it. Yet its very dimness is one of the crowning achievements of American lumbering.

Thousands of railway ties and timbers for the A. E. F. were cut in the fine old oak and beech forests of the Tourraine and southern Brittany, and all without leaving a single acre of devastated waste. It was done by the cutting of selected trees previously marked by the French forest rangers according to precepts and practices more than a century old. First just a few trees are removed to allow the light to filter through the leaf canopy and permit new seed to germinate in the soil—the “seeding cut,” they call it, then, several years later, a few more old trees to give the young ones a better chance; and finally, when the new forest is safely established

everywhere under the old, down come the remaining mother trees and it is only necessary to await the beginning of the next cycle.

What the American lumbermen did was simply to perform those various selective cuts, and Nature, unhindered in her regular course, almost immediately hid the scars. Of course it involved no mean skill, for France's limited forest area permitted no wastage, even in war time. It wasn't so much a case of low stumps as no stumps, for the trees were cut practically level with the

ground, and in addition great care had to be taken that the trees should fall in exactly the proper direction so as to do as little injury as possible to the young growth beneath. Everywhere the French officials and rangers seemed pleased with the American work.

Naturally they showed no surprise. Lumbering has for generations meant to them just this kind of scientific cutting. While, from the American viewpoint we marvelled when they indicated as the site of a former logging camp not a great bare clearing, such as we see in America, but a particular grove of trees that appeared no different from the surrounding forest, the real never-ending wonder to the ordinary ranger was the memory of all the wealth and variety

of food of which he had partaken in the mess shack that had stood between yonder two oaks. Then often he would lead the way a few yards to one side and point to several



INSTEAD OF DEVASTATION AND WASTE—THIS

The photograph above shows how many of the cuttings made by American lumbermen in the hardwood forests of France look today. In scientific forestry these represent different stages in opening the forest to admit light for natural reproduction.



large concrete slabs almost hidden by a new crop of seedlings. "Here stood the shower bath," and so saying he would express the acme of his admiration and wonder at the efficiency of American lumbering.

Nevertheless, the picture of this new kind of "cut-over" land, indicates to us not only what American lumbering can accomplish, but something of what will surely evolve in America with development of a real forest policy—something of the stately beauty of the permanent forests made economically practicable through



A FINE POINT IN CONSERVATION

This fine oak on the edge of one of the American cuttings near Blois was reserved because its high grade timber was thought to be more valuable for making veneer than for bridge timbers or railway ties.

the location of the producing areas near our great eastern markets for lumber consumption, and something of how the higher costs of scientific cutting may be met, not by the home builder, but through the saving of transportation costs which now make up more than half the price of all wood.

Over in the Vosges Mountains we find much the same story. Upon the presentation of proper credentials from the Ministry of Waters and Forests the regional chief greeted us with the utmost French courtesy, but at the statement that we wished to visit certain American cuttings a look of real disappointment crossed his face. "Monsieur," he said, "I should be only too pleased to take

you there, but as it happens I have just completed a trip through the region, and so rapidly has the new growth advanced that I was myself unable to distinguish the exact localities." It seemed, however, that a little farther west, in the fir country upon the very border of



CAN AMERICAN LUMBERMEN BEND THEIR BACKS?

A French district forester and one of his rangers standing upon the stump of a large oak tree cut by the A. E. F. lumbermen. Here where the young oak seedlings had already obtained a good start the forest authorities permitted the last of the older forest to be removed.

Alsace, the cuttings had been heavier, the immediate necessity for large quantities of timber for the trenches of the Toul Sector having made necessary what he termed abusive logging. Here, to be sure, we found the scars readily enough especially under the guidance of two rangers who had personally chosen and marked the trees to be cut. Sadly they indicated the almost bared patches. Two few trees had been left, they said, and the wind had since blown them down, but we saw only the broken or uprooted stumps. Trunk and branches had some time since been removed for sale at a small loss in order to reduce the fire hazard. How casually they referred to long standing forestry principles which we are just beginning to apply.

The trail of the 20th Engineers eventually brought us to the pineries, south of Bordeaux, plantations made two hundred years ago to protect the inland vineyards from the drifting dune sand. Here had been several good-sized mills, an American logging railroad, and complete American management. The men had worked as in our own pine country, clean cutting the forest block by block. Except, perhaps, for a little extra care in leaving low stumps, and for the possibility of utilizing smaller top logs, they might have been at home and these might have been the forests of South Carolina, or Mississippi or Louisiana. Yet mile upon mile of thick new growth



covering nearly every acre they denuded testifies to something different—what is it? Simply thorough fire protection. On a light soil almost any forest will by natural laws tend to reproduce itself, not always in exactly the same species, if the species are at all mixed, but effectively nevertheless. One fire immediately following



WHAT FIRE PROTECTION CAN DO

Effective fire protection was practically the only thing necessary to obtain the heavy regeneration shown in this picture of an American cutting in the Maritime Pine region.

the cutting of the old forest is often sufficient to destroy the seeds left in the soil, and successive burnings, such as so often occur in the cut-over regions of our lumbering states, invariably kill all chance of natural reproduction. Fire protection is the foundation of French forestry.

Today the former American saw mills in France have all been dismantled. Our heavy, rapid cutting equip-

ment did not generally appeal to the French lumbermen, who feel that because of their limited forest resources they can better afford the extra time required by a thinner saw than the waste of wood made by the wide American kerf. The mill sites, moreover, were not chosen with a view to suitability to the peace time needs of French industry, and here in the Landes one may see today here and there a hulking framework which it has proved too expensive to salvage. Camp sites and parade grounds too may still be recognized because the continued trampling of the soil prevented the regrowth. A year ago, however, the forest ministry sowed these spots anew,



ONCE A SAW MILL OF THE 20TH ENGINEERS

The use of the mill site and surrounding camp prevented natural regeneration, but now the entire area is covered with little Maritime Pines about two inches tall, grown from seeds sown by the French.

and such a crop of tiny seedlings are now pushing up even between the very timbers of the mill frames, that within a few years even these last relics of American lumbering in France will have vanished.

## ANNOUNCEMENT

The Annual Meeting was held on the 26th of January. At that time this issue of the magazine was in press. The report of the proceedings, resolutions, etc., will be printed in the March issue, which will also contain the financial statement of 1921.



# A GERMAN FORESTER'S VIEWS

From a Letter Written by  
DR. C. A. SCHENCK

When Mr. Arthur N. Pack went to Europe last summer as Commissioner for the American Forestry Association, to study forestry conditions and forestry needs of Great Britain, France, Belgium and Germany, he took with him a letter to Dr. C. A. Schenck, of Hesse-Darmstadt, a well-known forester. Dr. Schenck spent many years in the United States and conducted the Biltmore Forest School. Returning to Germany several years ago, he still keeps in touch with American forestry conditions and his views, here expressed in a letter to the Editor, are interesting.—Editor's Note.

On July 21st you have given a letter of introduction to me to Mr. A. N. Pack, when he went on his European errand of forest investigation. Mr. Pack may have told you, in the meantime, that he gave me, instead of I myself giving it to him, the most pleasant time I have had in many a long year. We traversed the old stamping grounds of Sir D. Brandis and of Sir Will. Schlich, later on those of the Biltmore Forest School, in Southwest Germany, and we had a glorious time on the spree!

Prior to Mr. Pack's visit, I had abandoned all thought of forestry. What use is there—that was my daily slogan—of nursing seedlings so long as children remain absolutely un-nursed? What use is there of forest protection so long as thousands of children remain without protection? And what is the sense of estimating timber so long as we neglect to estimate the benefits accruing from that old and decrepit stick of timber which stood, 2,000 years ago, on Golgotha, and which had the shape of a cross?

Those were my thoughts, with the result that I declined any participation in forestry work.

Yet when A. N. Pack came to me, when we visited the forests, when we talked shop, 25 hours a day—when I licked blood—I changed my mind rather abruptly.

Blame me if you can!

Fortunately, the condition of my wards, the German children and notably the children in Darmstadt, has much improved in the course of the last twelve-month. The cheeks are reddening, the eyes are brightening, the little stomies are filling; the fathers, factory hands, are fully employed, and help on a large scale is certainly today less needed than it was heretofore, before the American Quakers and many other good Americans came to the rescue.

Indeed, Mr. Pack and I, touring through woods and villages and cities, were struck by what "prosperity" seemed to prevail everywhere.

Of all the resources which the war has left to Germany the forests stand most intact. In the Spessart, in the Black Forest, in the Odenwald, in state, private and city forests, there is approximately the same stand of timber which was there prior to 1914. There are some large-sized cuttings, in lieu of the small coupes otherwise en vogue in Germany; the most accessible timber was removed rather than trees more evenly distributed over the

entire areas. Certain species, like white ash, have been badly reduced by the requirements of the airplane. Yet on the whole no harm done! Nevertheless, without these forests, Germany would have been beaten in 1915. The forest was yielding timber for guns and gunstalks, cellulose for high explosives, fuel in lieu of coal, fibre bandages for the wounded, lumber for the trenches, food for horses and cattle and goats, oil, (beechnut oil) in lieu of olive oil, turpentine and rosin (on a small scale I admit), and comfort to many a troubled mind finding refreshment in the forest air, in nature; also lots of work was made available for many people who were without employment. Indeed, if Germany had won the war the foresters might have claimed that the German forests were responsible for the victory. Never have the forests been proving their economic worth, in an emergency, to a greater extent than it was done in Germany of late years, even today! Foodcrops alone won't help; forests, forests *well distributed* all over the country are an economic necessity, in any emergency. How would the U. S. A. have stood, during the war without them? What would the people do if there were—owing to strikes or for other reasons—a sudden interruption of the coal supply?

Naturally, I have been much interested in the Capper—and Snell—bills now before Congress. Queerly, we have tried, in America, to establish forestry always where its establishment was of least economic *direct influence*. So in the 80s of the last century, in the prairies; who thinks of prairie planting such as was then advocated, in this year 1921? So in the 90s, when the most remote mountain fastnesses in the Far West were set aside as "forest reserves."

So today when we try to perpetuate the timber supply where it still exists, in the extreme West and South, instead of engaging in *constructive* forestry close to the densely settled sections of the East, where there are millions of acres lying unproductive—because they are fit for nothing but for constructive forestry.

I do not believe that any good can come from forestry-compulsory laws, or from forestry practiced at the land-owner's loss. At 50 cents a bushel, no wheat will be produced, all congressional legislation or Lenine legislation in Russia notwithstanding; nor will cotton be produced at 5 cents a pound. The people must pay a price at which it pays to produce wheat and cotton.



Now then if the good people of the U. S. A. desire to have timber and fuelwood they must be willing to pay a price for timber and for fuelwood at which it pays to raise them, by means of constructive forestry.

In other words, if the people want to have forestry the people will have to foot the bill; the people will have to create conditions of forest protection, forest taxation and of wood prices at which forestry investments are good investments.

Do you know of any U. S. A. forester who has placed his own money, on a considerable scale, in a second growth of American forests?

I do not know the forester who has done it.

We should never tire of telling the people of the U. S. A. that there cannot be any American forestry on a large scale unless it be at their expense, directly and indirectly, Capper fashion or Snell fashion, or in any other fashion.

The greatest enemy of forestry is cheap lumber and cheap fuelwood. When the German owner of woodlands makes a clean cut he nets per acre some \$500 gold; it is easy for him, then, to set aside \$10 for a second growth which, tho heavily taxed, is sure to be immune from fire, sure to develop into a first growth of the same money value, and sure to yield, from its thirtieth year on acre-returns of \$50 or so periodically, by way of thinnings. *How does the American forest owner stand?*

In Germany the price of timber is maintained by what is, in fact, a huge trust in which the various states as owners of forests, are the leading stockholders. No more timber and fuelwood is cut, annually, than the equivalent of the annual timber growth. What about the chances of a "timber trust" in America?

In addition, all German forests are and have been made accessible by public railroads and public macadam roads, on a gigantic scale. The people have been paying and are today paying for forestry. *That's why* there is any.

Do not misunderstand me. Not for a moment do I wish to advocate the importation of German forestry, or of French forestry, in the U. S. A.

I want to illustrate, however, the fact that every country on this globe has exactly as much forestry as its inhabitants have been willing to pay for.

For the U. S. A. none but American forestry will do.

Colonel Greeley, I am told, claims that 75 per cent of American forestry is forest protection from fires.

Colonel Greeley is wrong; 95 per cent of all American forestry, in my opinion, based on 20 years of practical work in the U. S. A., is forest fire protection. Indeed, no power other than fire can prevent a forest, *id est*, some kind of a forest, from establishing itself on cut-over land. "Some kind of a forest" may not be what the forest enthusiasts desire to obtain; they want a forest as good as, or better than the primeval. Are they also willing to foot the bill?

If the people want the biggest merchant marine, the people must pay for it; if they want the best railroads, they must pay for them; if they want the best forestry, well, they must pay for it; pay they must, either as owners of marine and railroads and forests; or as users

of marine and railroads and forests; or as both owners and users; and it makes no difference whether the regime be socialistic, or czaristic, or democratic. There is absolutely no escape from paying the bills.

I have been dilating on this topic because it has been, for many years, my hobby topic. Like a canary bird, I know only one song to sing. If forestry is anything less than commonsense applied to cutover and standing woodlands, there is no chance for it in the U. S. A. Commonsense tells us that investments, to be made on a large scale, must be safe and remunerative. There are no better business men in the U. S. A. than are the lumbermen. If none of them is practicing forestry the reason lies in the unremunerativeness and in the unsafety of the investment. Amen.

This winter I hope to be able to refresh my mind on the new issues of American forestry. The Association periodical I am reading regularly, also "Hardwood Record," copies of the American Lumberman, of the Timberman, of the Lumber World Review, are reaching me from time to time. All of this is not enough. I desire to have a more personal touch with the things going on, and I shall be ever so thankful if you will direct to me any American interested in forestry when he pays a visit to Germany. I'll try my best to show to him that German forestry is the product of high prices, of a timber trust, of fine public roads in the woods, and of a ready market for fuel wood.

### The Missouri Forestry Association

The Missouri Forestry Association was formally organized at an extremely interesting and enthusiastic meeting held at the Missouri Athletic Association on December 7th, and Hermann von Schrenk, timber engineer and plant pathologist, a director of the American Forestry Association and a leader in the forestry forces in the United States, was elected president. Dr. von Schrenk presided at the meeting, attended by representative men and women from all over the state.

The object of the association, as announced in the constitution adopted, shall be "to advance the public importance of timber crops in the economic life of local communities and the whole State and nation, so that due provision will be made for insuring particularly within Missouri a proper area of forests so maintained and cared for as to furnish a supply of timber sufficient for future needs and to make available all the other benefits of health, pleasure and profit which forests afford."

The by-laws provide for the usual association officers, who are also members of an advisory council consisting of twenty persons. The membership of the organization is divided into three classes, all enjoying equal rights and privileges.

The following officers were elected: Dr. Hermann von Schrenk, St. Louis, President; J. W. Fristoe, St. Louis and Mrs. Marie Turner, Kirksville, vice presidents; W. P. Grumer, St. Louis, Treasurer and Prof. Frederic Dunlap, Columbia, Secretary.



# SHERLOCK HOLMES OF THE FORESTS

By G. H. Dacy

A DECIDED abatement in forest fires of incendiary origin has been consummated in the National Forests of California since the establishment of arson squads and forest detective service among the organized forest rangers of the Golden State. Previous to the inception of this Sherlock Holmes service of the forest primeval, anywhere from 150 to 300 man-started fires broke out in the government timberlands each fire season. Last year, as a direct result of the arson squad activities, the total number of incendiary fires was reduced to 28 and all evidences point toward the potential reduction of this source of fire evil to a negligible amount.

In many instances, the neglect and carelessness of hunters, fishermen and campers are responsible for the outbreak of forest fires of human origin. Despite that the national woodlands are liberally posted with signs warning tourists and campers to exercise special care in putting out camp fires and in the general use of matches and

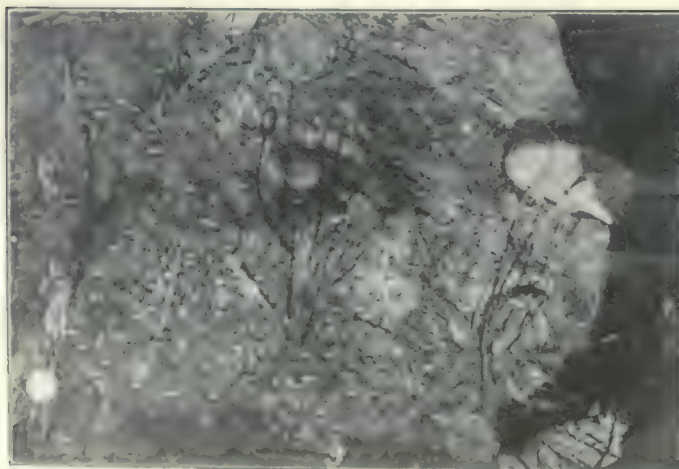
lighted tobacco, innumerable cases of woodland blazes have emanated from sheer negligence. During the fire season from June until November, many of the western forests are so dry that a single match carelessly discarded from a passing automobile may cause a destructive conflagration which may destroy thousands of feet of valuable lumber in the making. It is not that Uncle Sam finds pleasure in running to earth and punishing such offenders, his emissaries simply function along those lines in order to impress upon all forest users the basic importance of exercising every effort to prevent fire and that unless they practice such precautions, trouble is in store for them.

The forest rangers who compose the arson squads have been trained in modern methods of sleuthing and they employ all the arts and artifices of the metropolitan plain-clothesmen in assembling and interpreting evidence and in gathering data which will lead to the identification



BURNING GLASS USED TO START FIRE—INCENDIARY CAPTURED

These photographs indicate developments in detective work worthy of the best that Sherlock Holmes ever did. No. 1 shows the trackers finding the "plant" of an incendiary fire in the forest. No. 2 shows a bunch of partly burned matches. No. 3 shows the wire which must have held something to set the matches on fire. A search in the ashes revealed a burning glass. The trackers quickly deduced that the plant had been constructed to start a fire twenty-four hours after the incendiary had left. They reconstructed the plant as shown in No. 4 and ultimately traced, captured and convicted the criminal.





and location of the transgressors. In these detective activities they make use of water glass casts as well as impressions made by the use of dental plaster, plaster of Paris and ordinary cement in making models of the foot tracks of both men and beasts. They carefully collect and preserve all articles found around the abandoned



FROM HEEL TRACK TO JAIL

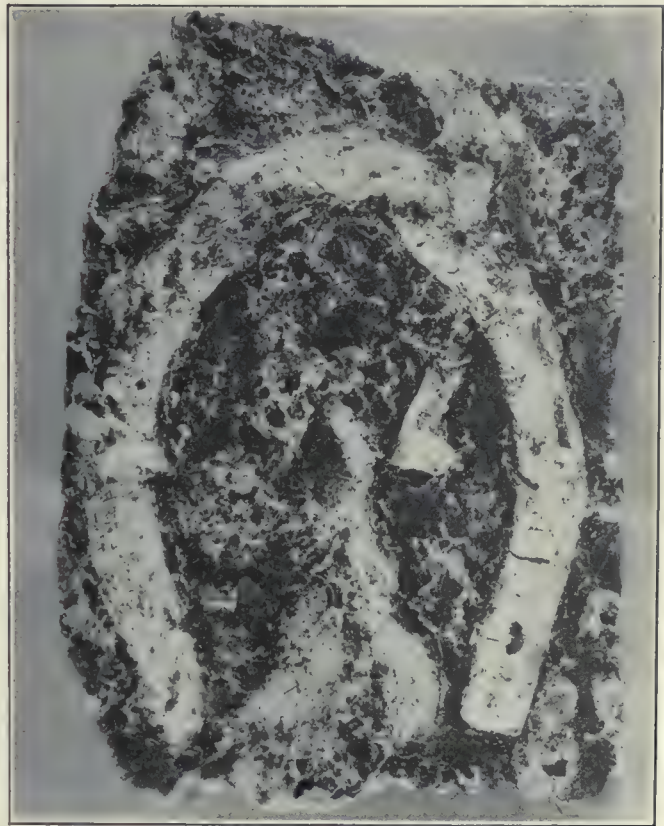
Very faint was the impression of this heel mark near where a forest fire was started but it was sufficient to give the forest detectives a trail which they followed until they captured the man who had started the fire.

camp fire or point where the forest fire started, which, subsequently may be examined for finger prints. They search for unburned matches, the charred remains of man-started fires, and other mediums used in kindling the flame.

One party of tourists who started a disastrous forest fire through carelessness with a campfire were tracked, caught and punished by means of a laundry mark on a handkerchief. The handkerchief was found near the outbreak of the fire. After several day's investigation, a laundry was located in a neighboring city that identified the mark on the handkerchief and furnished the home address of the culprits. Scraps from discarded envelopes and letters have led to other convictions. Frequently, peculiarities of horse hoof conformation or unusual method of shoeing as well as extraordinary human foot tracks or automobile tracks have aided the forest guardians in capturing offenders who have caused forest fires. Not infrequently, disgruntled stockmen whose flocks or herds have been driven from the grazing lands in the

National Forests because of trespass seek to wreak revenge on the federal foresters by starting a series of fires. Occasionally, some of these fires are so cleverly arranged and set off, that it takes weeks of earnest effort and investigation to track the culprits to their lairs.

Three years ago in one of the California forests, 15 incendiary fires broke out the same day at different parts of the timberlands. The forest lookouts reported that they were certain that no human beings had been in the vicinity of the spots where the flames developed that day. After painstaking and detailed search, fire remnants were found near the outbreak of one of the fires which indicated that an ingenious method of set-up had been devised and followed in the starting of some of these blazes. A glass lens was found which was so mounted in a wire



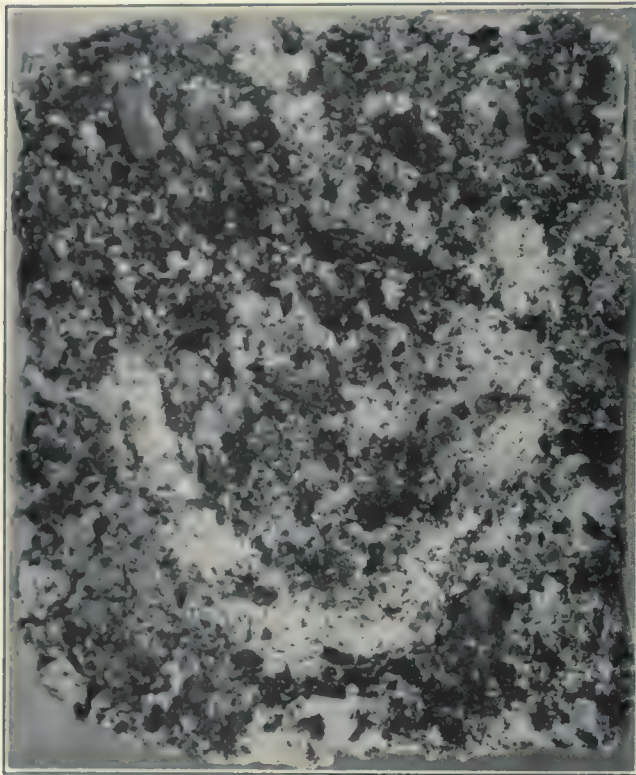
THIS CONVICTED A STOCKMAN

A plaster cast of a hoof print of a horse found near the spot where a forest fire started resulted in a malicious minded stockman who set fire to a California forest being sent to jail.

frame that terminated in a long arm that it could be stuck in the ground in direct line with a pile of matches and dry woodland debris. The glass was so arranged that when the sun reached a certain point in its course, its rays would be intensified and centralized by passage through the lens and concentrated on the matches. Ultimately, the heat would be sufficient to ignite the matches and surrounding tinder. This novel method of starting a forest fire enabled the instigator to establish a complete alibi by being many miles from the scene of fire outbreak when the blaze began. This set-up was so arranged that the fire would not be started until perhaps 24 hours after the snare was laid.



Human foot prints in numerous cases have led to the identification of malicious-minded incendiaries who willfully tried to destroy valuable government woodlands. A worn heel, a stubtoed shoe, and foot deformity as indicated in the tracks, special styles of rubber heels or hobnails, impressions of bare feet in the dust or mud, and unusual types of footwear have on one occasion or another enabled the forest detectives to run down cases of forest incendiarism. Similarly, unusual foot tracks of horses, mules or burros ridden by fire-starters have often aided in the trailing and detection of miscreants.



HUMAN FOOT PRINTS AS EVIDENCE

The naked eye will find nothing here but the microscope of a clever tracker found faint impressions of foot prints which led to the detection and conviction of a man who had set a Western forest on fire.

Where a foot mark of either a human being or a riding animal is discernible in the dust or mud close to the scene of a forest fire, the federal forest policemen make an impression of this evidence by flowing a wet mixture of cement or plaster over the track and allowing it to harden. Plaster of paris sets in about 5 minutes. The impression can be removed and used as court evidence thereafter if the culprit is caught and brought to trial. In case the track appears in dry sand or dust, a small amount of the plaster is sifted over it and then a few drops of water are sprinkled over the plaster. Where the footprint is found on a dusty floor or similar location, it is sprayed with a mixture of one part shellac and four parts of wood alcohol. This spraying takes 15 minutes or longer and often more than one quart of shellac is used on a single track. After the material has dried 30 minutes, a plaster impression of it can be made.

The age of a track is shown by the sharpness of im-

pression, by moisture and color, whether leaves or dirt lumps have fallen into it and by the condition of broken twigs. A trail made at night is often indicated by the way it bumps into or makes detours around obstacles. Whether a horse was ridden or led may be shown by



THIS CONVICTED AN INCENDIARY

The forest detectives trail many criminals and negligent sportsmen, tourists and campers to their homes by means of automobile tire tracks. They have become so expert that they can tell the direction the car is going, the approximate speed and the type of car by examining these tracks.

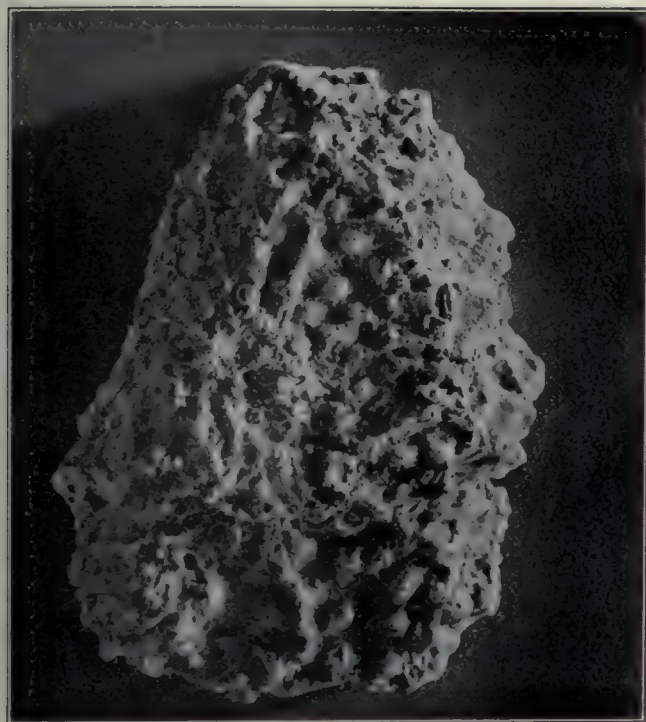
whether or not the trail passes under or around low-hanging limbs. Speed may be indicated by the degree of slide at the heel of the foot print, depth of the heel edge and toe edge, length of the drag at the toe and the distance between the tracks. If the man is carrying a burden, his feet are wider apart, his steps are shorter and more unsteady. In case of a lame leg, injured knee, or hip twist, the step is shorter.

Where the trail leads through dry pine needles, the trailers often have to get down on their hands and knees in order to distinguish breakages and minute differences in color which are not apparent from an erect position. Tracks in dry grass also are very hard to follow. Usually unless the wind is blowing, grass will hold all impressions made over it until the appearance of night dew, fog or rain. Through brush a trail can be followed by broken or skinned twigs. When a trail is lost, circles ahead in the probable direction of the passage often will favor its re-location.

The art of forest sleuthing has been developed to a stage of perfection and accuracy where the government representatives can now predict the travel direction of au-



tomobiles by merely examining the tire tracks. On earth roads, the pattern imprint of non-skid tires is steeper and more distinct on the rear side of each indentation while stones are shoved ahead by the wheels, the paths



SHOES WORN HEEL FOREMOST

It took a microscope to detect the clever effort of an incendiary to throw detectives off his track by wearing shoes heel foremost but the trackers were not fooled. Depressions in the tracks excited their curiosity and they quickly solved the mystery and got their man.

of these stones usually being intact close behind where they stop while dust is piled up by their shove on the forward sides. The imprint of partly imbedded stones, slightly displaced by the wheels also furnish evidence of machine direction, the displacement being backward in very small stones, and forward in those large enough to receive both lateral and downward pressure. A sprinkling of sand or dust usually is deposited on the rear side of stones or other obstructions passed over by the wheels while the forward side is usually swept clean. In dropping into chuck holes, the impact, or wider tire imprint, is greater on the forward side of the hole or against the obstruction. In dropping into ruts, a wheel will run on the high side to a feather edge, while in climbing out, it will remain in the rut until side pressure forces it to climb out abruptly. Other landmarks of automobile direction are: the direction in which water drops or mud are carried out of a mud hole, traction slips which occur in going up steep grades, the turn on curves which usually is more abrupt on leaving than on entering the curve and the "Y" where a machine backs out of a roadside stop.

Excessive speed generally is evidenced by the wind swirl disturbances of the track, the distance of the side throw of mud, sand or water, side lurch on rough roads and the distance of the wheel jump in passing over obstructions. The size of the car is indicated approximately by

the width of the tire tread although this is affected by the amount of load and the air pressure of the tires. When the load is heavy, there is a higher piling up of the dust ridge which is left in the center of the wheel track by suction and thrust of traction on pneumatic tires.

Under conditions where it is not feasible to dig out the footprint itself or to make a cast of it, the usual plan pursued is to photograph the track. In such case, the camera lens is placed exactly parallel to the surface to be photographed, to avoid distortion of perspective. A special clamp is used for attaching the camera to a board or support set up at the required angle. Thereafter, the photograph can be enlarged to the exact size of the origi-



HOB-NAIL TRACKS

Impressions from a peculiar kind of hob-nail in a shoe led the tracker to discover a shoemaker who remembered putting them in a man's shoes. The man was arrested and found guilty of firing a forest.

nal foot print. In cases where a camera is not available, the watchmen of the forest draw accurate diagrams of the tracks on paper and henceforward use them as identification indexes.

Finger print records are made permanent by sprinkling some powder of contrasting color such as aluminum or bronze over the prints. Dragon's blood powder for light surfaces and talcum powder or gray chalk for dark surfaces are very satisfactory. Where these materials are not available, powdered charcoal, or very fine pencil scrapings can be used over light surfaces and borax or flour for dark surfaces. All these materials must be dry when used as they pile up and are generally unsatisfactory for such purposes when damp. Subsequently, these finger prints which are smudged easily by friction, may be set by spraying lightly with a solution of one part of white shellac and four parts of wood alcohol. Dragon's blood can be set merely by heating slightly with a match flame after being applied to the surface where the finger print occurred.



## SNELL FORESTRY BILL HEARINGS

**I**n appearing before the House Committee on Agriculture, at the hearings during the week of January 9 on the Snell bill providing for joint Federal and State action to check forest devastation and insure permanent timber supplies, Col. W. B. Greeley, Chief of the Forest Service, urged immediate action by Congress to insure a continuance of timber growth on lands best suited to this use.

"I am not appearing as a proponent of any particular bill," said Col. Greeley. "I am testifying in my capacity as head of the National Forest Service. My purpose is to urge upon the committee the need for Federal legislation of some comprehensive character to reforest the timberlands of the United States hitherto cut or now in progress of being cut; and to discuss the various forms which such legislation may take.

"Federal legislation is needed because the United States is now consuming wood four times as fast as it is being grown. Enormous areas of the virgin forests have been converted into lands largely or wholly unproductive. Two-thirds of the lumber users in the United States now pay more per thousand feet in lumber freight alone than they paid for the delivered commodity 30 years ago. The country faces definitely a growing scarcity and increasing cost of everything made from wood. The problem is nation-wide and must be dealt with in a nation-wide way.

"The definite aim of Federal legislation on this subject must be to make sure that all forest lands in the United States, whatever their ownership, are kept continuously productive; that as fast as one crop of timber is cut another is started. By this means and by this means only can the needs of the country be adequately met. There is no lack of forest land, if all not needed for agriculture can be kept at work producing wood. Federal legislation must aim at restoring forest land now idle to productive use and at preventing land now bearing merchantable timber or young growth from becoming idle through forest fires or destructive methods of logging.

"These results can in part be accomplished by extending the National Forests to include all Government-owned or Government-controlled lands chiefly valuable for growing timber or protecting watersheds, and through an enlarged purchase policy, particularly of denuded lands now privately owned and desirable for public ownership. State and municipal ownership should also be encouraged. But public agencies manifestly can not acquire even a major portion of all the forest land in the country. It is now 79 per cent in private ownership, and will largely remain so.

"Federal legislation should encourage tree planting by co-operation with States in growing and distributing planting stock; it should not only encourage but assist in effective nation-wide protection of all forest lands from fire; and it should also set up some method of reasonable public control over the cutting of private timber,

to the extent necessary to insure prompt reforestation of the lands cut over.

"Such a program involves putting private forest lands in the class with public utilities. We must recognize a dominant public interest in the way in which this form of private property is used.

"It must, however, be recognized with equal force that timber can not be grown unless the undertaking is a practicable and reasonable one for the owner. Growing timber is an economic matter. Reasonable and equitable aid must be given the private owner in accomplishing the public benefits desired, and such conditions of security must be created as will make it economically feasible for him to comply with public requirements.

"Various State laws have already applied the principle of public control—Oregon, Minnesota, New Hampshire, and Louisiana, for example. But we are very far from a uniform or consistent application of this principle. To bring that about, by one means or another, must be one of the important features of Federal legislation.

"Two methods for exercising public control to insure the continuous productivity of forest lands have been advocated in measures now before Congress. Sections 1 and 2 of the Snell bill would authorize the Department of Agriculture to define and establish what is necessary in each region, and through financial co-operation to encourage the enactment and enforcement of such necessary measures by the several States, through the police power. The Capper bill would accomplish the same purpose by direct Federal authority through the taxing power of the national Government."

After pointing out that each of these alternative propositions has its strengths and its weaknesses, Col. Greeley continued:

"These two principles are supplementary rather than opposing. I favor some immediate enactment in line with the principle expressed in the first two sections of the Snell bill, and I do not believe the country is now ready for the other step. But immediate action is urgent. Among advocates of a National Forest policy there is disagreement only on the one point as to whether the States or the Federal Government should exercise control over the cutting of timberlands. It may not be desirable or opportune to attempt a complete National forestry policy in one piece of legislation.

"It would be unfortunate in the extreme to permit substantial progress in Federal legislation on forestry to be delayed or impaired by a conflict of views on one feature only of the whole program. I wish to suggest that the committee consider the wisdom of drafting a bill covering the following points:

"(1) Broader authority and authorization of adequate appropriations for Federal co-operation with the States in fire protection. In my judgment this outweighs all other measures in immediate importance.



"(2) Authority for effective co-operation with States in growing and distributing young forest trees for planting.

"(3) Broader provision for extending National Forests through purchases of private lands.

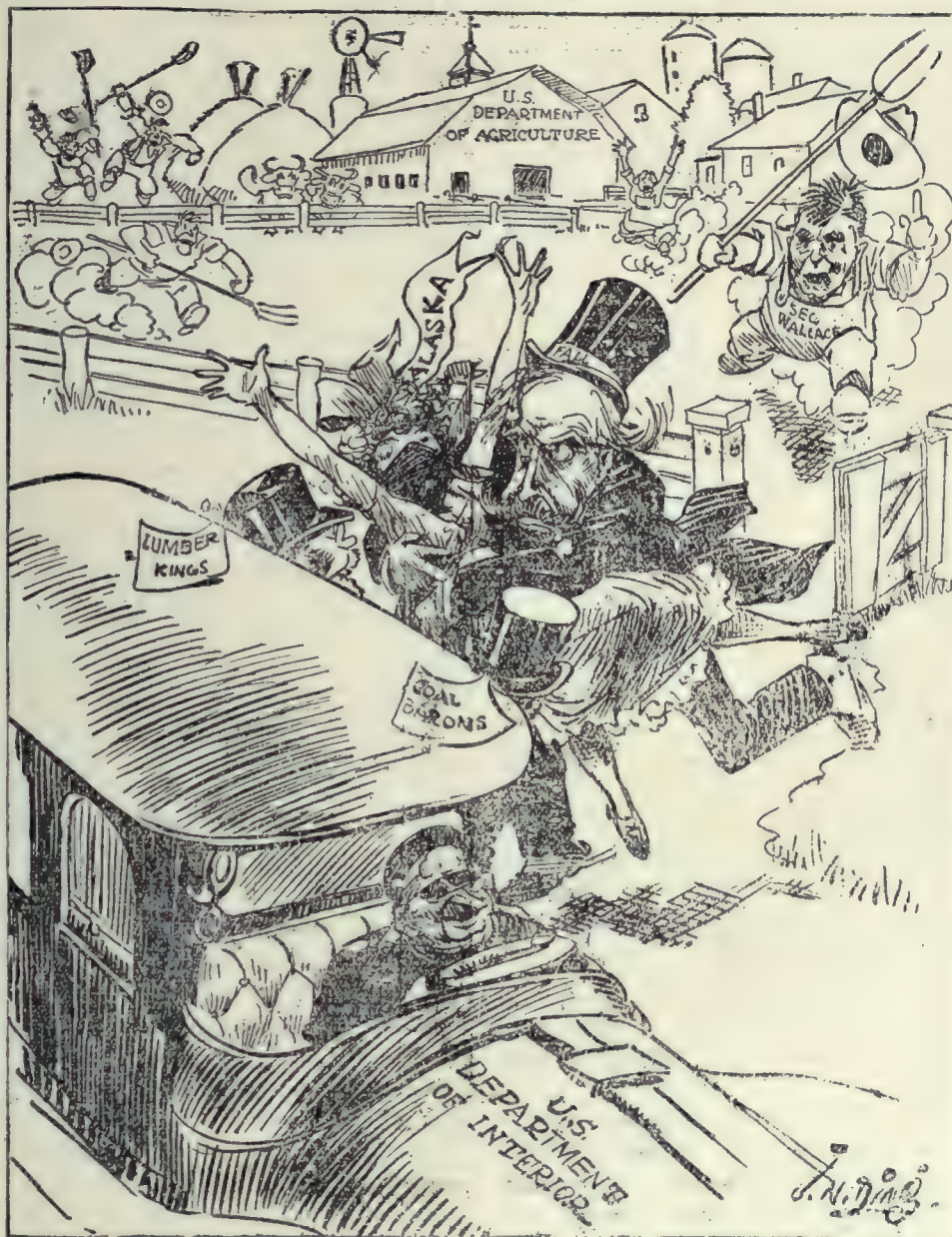
"(4) Provisions for classifying all lands remaining in public ownership or control and for incorporating in National Forests areas found to be valuable chiefly for the growing of timber or the protection of water sources. This should apply to the remaining public domain and to lands in Indian reservations, with provision for equitable liquidation of Indian property rights in such lands. By this means alone 8,000,000 acres of forest land can ultimately be placed within National Forests and its permanent productivity assured."

The Committee on Agriculture gave five days to the hearings and heard a number of witnesses, those favoring the bill being introduced by Congressman Snell. Among them were George S. Long, of the National Lum-

ber Manufacturers' Association; Alfred Gaskill, State forester, of New Jersey; Ray A. Danaher, president of the Sugar Pine Association of California; J. W. Toumey, Dean of the Yale Forestry School; H. C. Campbell, editor of the Milwaukee Journal; W. A. Babbitt, of the Association of Wood Using Industries; E. A. Sherman, Associate United States Forester; W. L. Hall, secretary of the Central States Forestry League; Philip W. Ayres, forester for the Society for the Protection of New Hampshire Forests; Elbert H. Baker, of the Cleveland Plain Dealer; Geo. Sisson, of the American Paper and Pulp Association; E. T. Allen, of the Western Forestry and Conservation Association; R. S. Kellogg, chairman of the National Forest Policy Committee, and Charles Lathrop Pack,

president of the American Forestry Association. Gifford Pinchot appeared with others in opposition to the bill. The committee is expected to make a report on the bill within the next few weeks.

**WHAT'S THE IDEA? SHE WAS ALWAYS HAPPY  
DOWN ON THE FARM, WASN'T SHE?**



Darling—in the Portland (Maine) Press-Herald.

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**THE COUNTRY HAS GONE DRY—BE CAREFUL WITH FIRE  
FORESTS FURNISH FUTURE HOMES—DON'T BURN THEM**



# THE PENNSYLVANIA FORESTRY ASSOCIATION REPORTS

By F. L. Bitler

**F**ORESTRY in Pennsylvania has made good progress in the year 1921. There have been added 17,136 acres to the 1,102,695 acres in the 23 State Forests, making a grand total of 1,125,611 acres, which were purchased at a cost of \$2,545,135. The total amount which has been expended for administration, development and improvement was \$4,702,156, making a total expenditure for land and care of \$7,247,291. The State Forests are now conservatively valued at \$12,000,000, showing a net gain of \$4,752,709. Extensive plans had been formulated by the Department of Forestry for the acquisition of more land, but the Governor was compelled to veto the appropriation of \$500,000 for this purpose, owing to lack of State funds.

The forest lands of the State have been divided into 26 forest districts, each in charge of a district forester, each district containing from 350,000 to 500,000 acres. In three of these districts no land is owned by the State.

There are 380 State-owned buildings on the State Forests, valued at \$294,038.

There are 43 forests and 87 forest rangers in the employ of the Department of Forestry, while 2,488 Forest Fire Wardens who watch for and fight fires are intermittently employed.

Much work has been done in improving the State forests since their purchase. Approximately 2,000 miles of boundaries have been surveyed, cleared and marked, and 4,000 miles of roads, trails and fire lanes constructed and maintained.

Scattered through the State are some tracts of forest land of unusual interest and scenic beauty. Twelve of these have been set aside by the State Forest Commission as State Monuments. A number of State Parks have been created for their educational, recreational and esthetic value.

The outstanding feature of forestry in Pennsylvania was the appropriation of \$1,000,000 for forest protection against fire for two years.

The Pocono Forestry Association maintains a splendid fire-fighting organization, and has five wooden towers equipped with telephone lines. Its members also plant annually thousands of young trees in the Pocono Mountains.

The Anthracite Forest Protective Association in the hard coal region has four steel and one wooden towers, with telephone lines, and a good fire-fighting force.

The Blair County Game, Fish and Forestry Association not only aids in suppressing forest fires, but also is active in planting trees and in protecting and propagating game and fish.

The Central Pennsylvania Forest Protective Association and the McKean County Protective Association have rendered valuable aid in their respective localities. The Lycoming County Protective Association has assisted in the protection of forests in that county by reason of contributing to patrol service, and educational work.

The Boy Scouts of America, the various railroad and water supply companies have been helpful in reducing forest fire losses.

The State Forest Nurseries, since their inception, have supplied 48,853,936 trees, of which 34,216,727 were planted on the State Forests, the plantations now covering 22,410 acres.

About 4,000,000 seedlings and transplants will be available for free distribution during the Spring of 1922, and there will remain 8,000,000 too small for present use, but which will be distributed in the Spring of 1923.

The Department of Forestry is co-operating with private timberland owners throughout the State by making examinations and recommendations as to the practice of forestry on their holdings.

The State Forest Academy, at Mount Alto, has continued to supply its yearly quota of men splendidly qualified to care for the future forest of our State.

The Department of Forestry in Pennsylvania State College has a steadily growing student body.

Lehigh University is constantly improving its Arboretum and experimental plantations, which will give much useful information as to the value of different species of trees, their comparative growth, etc.

The new Allegheny National Forest will comprise 412,000 acres in Warren, McKean, Forest and Elk Counties, and a tentative allotment of \$150,000 for the purchase of lands has been made by the Government. The headquarters of this forest will be at Warren.

The State of Pennsylvania, formerly the largest producer of timber in the United States, uses annually about two and a half billion feet of lumber, of which it now produces but one-fifth. The annual loss to the State, due to the falling off in its lumber production, amounts to \$100,000,000—twice as much as it costs to run the State government. We pay at least \$50,000,000 a year for lumber imported, which should be grown at home, and more than \$25,000,000 a year freight on this lumber. The loss through closing of wood industries, floods, which could be prevented, etc., represents at least \$25,000,000 more.

The United States Chamber of Commerce has appointed a Forestry Committee which is making an exhaustive study of forest conditions in this country, visiting and holding conferences in different sections. The report is awaited with interest. Our President, Dr. Henry S. Drinker, is a member of this Committee and is Chairman of the Subcommittee on Timberland Taxation.

The fiscal year of the Pennsylvania Forestry Association ended December 1, 1921 with a very creditable showing.

Officers elected at the annual meeting for 1922 were: Dr. J. T. Rothrock, President Emeritus; Dr. Henry S. Drinker, President; Mr. Robert S. Conklin, Mr. J. Freeman Hendricks, Mr. Albert Lewis and Mr. Samuel L. Smedley, Vice Presidents; Mr. Samuel Marshall, General Secretary and Mr. F. L. Bitler, Recording Secretary and Treasurer.

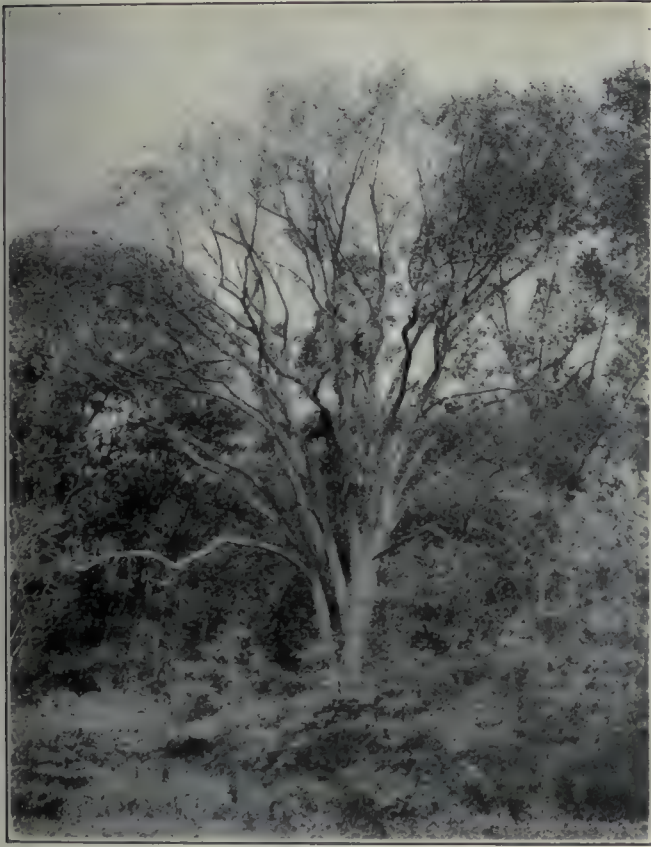


# TREES IN WINTER

By Henry Thew Stephenson

SOME people who are fond of flowers and delight in the association of trees relate their pleasure wholly with summer. It is true that few flowers bloom in the winter. But it is a mistake to think for that reason the winter woods are silent. In spite of the many flowers growing beneath the foliage of the forest one hardly feels unsafe in saying that in the wood the tree's the

It is also the most difficult to acquire. One characteristic feature is the method of branching, a quality plainly visible in winter, but so masked by foliage in summer as to be impossible of observation. If one could imagine an ash and a maple, one the exact counterpart of the other in outline and general branch distribution, the two trees would still look so different that the accidental similarity might pass unnoticed. For there is a clumsy coarseness about the twigs of the ash in sharp contrast to the graceful delicacy of the slender twigs of the maple. But the twig of neither tree can be seen against the sky in summer. How often does one lament the disappear-



BITTERNUT

It is easier to identify many trees in winter than in summer, when unmistakable characteristics are camouflaged by the thick foliage.

thing. And by all odds the winter is the best time to get acquainted with the trees.

Many attempt to identify the trees only by the leaves. An experienced woodman considers the leaf as the least important mark of identification. And as to flowers—the flowers of many of our largest trees are so inconspicuous that many people have never even noticed them, perhaps would not have recognized them as flowers if pointed out.

Let me see if I can make a little plainer what I mean by saying that winter is the season to be preferred for the task of learning to recognize the trees.

One who knows trees thoroughly, as a rule, recognizes them by indications that cannot be accurately put into words. He recognizes a tree in its entirety as one recognizes a person. This is the surest kind of identification.



SYCAMORE

The graceful, reaching white arms of the Sycamore are seen at their best in winter when undisguised by foliage.

ance of a distant line of white sycamore tops as they are gradually blotted out by the growing foliage.

Bark is another significant characteristic best observed in winter. The form, texture and color of bark is a very illuminating subject of contemplation. And it is not so easily studied when poorly lighted beneath a mass of foliage which may also materially influence the tone of the color. And the tone gradation of bark is a matter





CHESTNUT TWIG

The ultimate grace of the chestnut tree is clearly expressed even in its smallest twigs.

of great delicacy. But these are qualities that an inexperienced student may well despair of as a matter of special study at first—winter or summer. It is the kind of tree knowledge obtained last. One does not learn to identify trees by reading written descriptions of bark. Rather, he develops a feeling for bark as a result of his study and association with trees in the field. What, then, is there for the inexperienced student to occupy himself with in winter?

Whoever has studied botany is used to a key based upon the form and structure of the flower. When one comes upon a strange plant at a season other than the flowering the key is useless. As a matter of fact there can be no key based upon but

one element of plant life that will serve to identify all plants at any time. The structure of the flower serves in the greatest number of cases and is therefore the one universally adopted. It is not true, however, that the usual system of identifying trees based upon the leaf is the most useful. In fact, a key based upon the winter appearance is easier to apply and more certain of application than the summer key based upon leaves.

Though the finer distinctions of bark and branches cannot be put into words there are many distinctions so divergent as to be of great prac-



BLUE, OR WATER BEECH

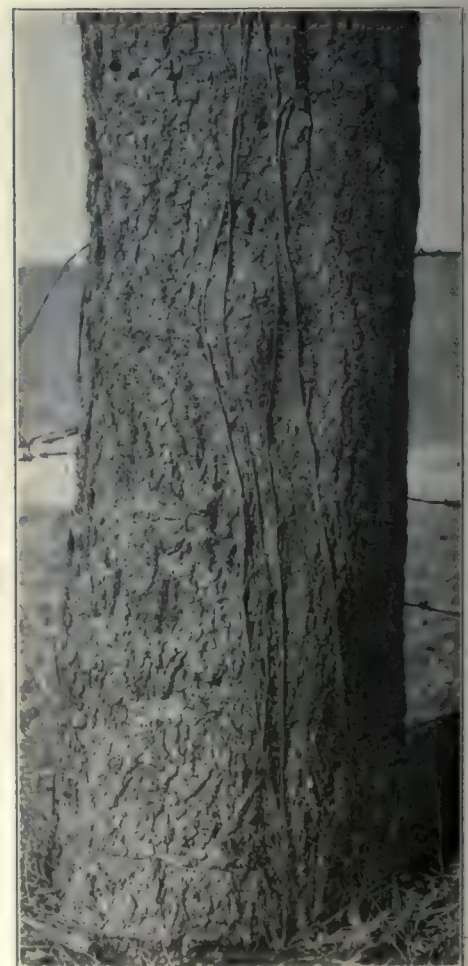
Readily and safely to be identified by a characteristic bark.

tical advantage. One may not recognize the subtle difference between the bark of a white elm and that of a slippery elm, but neither could be confused with the bark of a beech or a birch. Many of the rough barked trees are divided into ridges and furrows that present easy characteristic differences. The flat-topped ridges of one will distinguish it from the round-topped ridges of another. In some trees the ridges are divided by transverse cracks into longish blocks as in the sassafras, or into squares as in the dogwood, or into hexagonal blocks as

in the tupelo. Other kinds of bark flake and scale without forming deep fissures as the sycamore. Sometimes the ridges of the sugar maple rise in great projecting flaps. Sometimes the ridges scale off in different ways. The scales of the shagbark hickory are attached at the top and break loose at the bottom; those of the silver maple are attached in the middle and break loose at both ends.

But it is upon the twig that one depends most for the identification of species. Twig is a technical term that implies not only the end of the branch, but also that portion only which grew the preceding season. This twig is made up of skin, wood and pith, as in the main stem of the tree.

When one breaks a twig of sassafras he recognizes the characteristic odor. Had it smelled of wintergreen he would have suspected a birch. Some twigs when broken will show a dry pith, others will exude a milky



BUTTERNUT

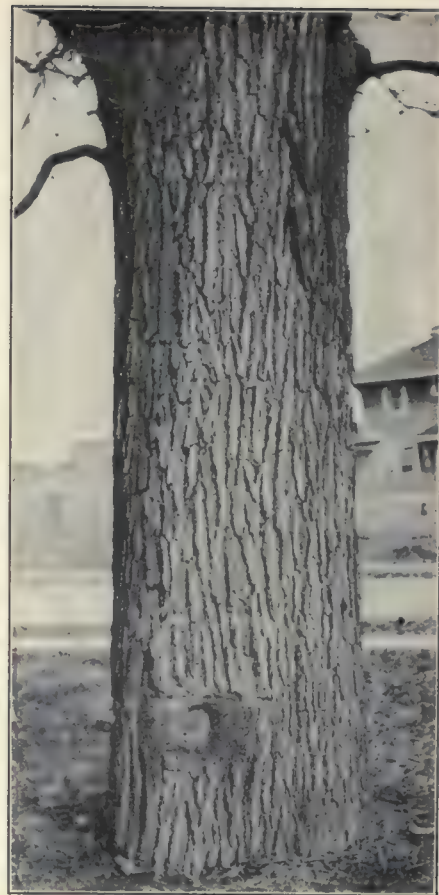
The bark is light brown-gray, very rough and seamed with short, flat-topped ridges.



sap as in the mulberries. If the twig is cut off sharply at right angles the generally star-shaped section of the pith suggests an oak. As the round sectioned pith is so common it is not of much use as a mark of identification. But if a twig is cut longitudinally through the center of the pith a new set of characteristics is displayed. The pith may be solid or continuous as in the great majority of trees. But it may be chambered, that is, consist of transverse divisions or diaphragms separated by empty spaces. There are but three large forest trees common in the central states that have chambered pith. It is frequently disguised and hard to recognize in the hackberry, but it is very plain and evident in the walnut and butternut. The color and the spacing of the diaphragms instantly distinguish a walnut from a butter-

nut. In many respects the twig of butternut (a walnut) resembles the twig of bitternut (a hickory.) A glance at a section of the pith immediately differentiates them. The butternut pith is brown and chambered, the bitternut pith is brown and not chambered.

Though I have spoken of the pith first it is the least important element in the winter identification of trees by means of the twig. It is on the



BUR OAK

Known also as Mossy Cup Oak. It has an ashen gray, or gray-brown, thin, scaly bark. It is one of the tallest oaks in the eastern United States.



HOP HORNBEAM

The bark is gray-brown, scaly and scored perpendicularly into long, flat narrow strips about four inches long.

epidermis, or outside skin, that we mostly depend.

Twigs are rough or smooth. They may be of almost any color, varying from the bright green of the sassafras, the brilliant yellow of the golden willow, through various reds, browns, grays and black. Twigs are sometimes smooth, or hairy, or ridged, or winged. The square section of the blue ash twig immediately distinguishes it from the other ashes. While the flattening of the twig at the node prevents us from confusing an ash with

any other tree. We have, however, hardly made a beginning in the enumeration of the differentiating characteristics of the twig. Every leaf which fell in the autumn left a scar on the twig. If the leaf scars of a large tree are opposite we may be reasonably sure that the tree is a buckeye, an ash, or a maple. And there are but a few low, or shrub-like trees that present this characteristic. If the scars are not opposite their arrangement may still be very helpful. The leaves may originally have been attached to the stem in such a way that the twig has remained straight, or attached in another way which produced a twig elongating in a zig-zag fashion.

Furthermore, the outline of the scar is characteristic. In the maples it is, generally speaking, crescent shaped, in the catalpa oval, in the walnut heart-shaped, etc. But there are finer



FLOWERING DOGWOOD

The dogwood, its bark characteristically divided into squares, is readily recognized by the visitor to the winter woods.





MAPLE TWIGS

Sugar, Silver, Norway and Box Elder. The graceful delicacy of the slender twigs of the maple is marked.



SUGAR, NORWAY AND SILVER MAPLE TWIGS

This shows the great diversity of the buds in the same genus.

distinctions of shape than this. The scars of the white and red ash are similar except that the top line of the white ash scar has a notch in the middle of it and the red ash has no notch. The same difference occurs in the scars of the walnut and the butternut. Sometimes the leaf scars extend fully round the tree. They just meet in the Norway maple, but there is a little spur formed at the point of meeting in the box elder (the ash-leaved maple.)

Every rib and vein in a summer leaf is in reality the end of a sort of tube or channel which runs back through the petiole of the leaf, down the stem, and communicates



BUR OAK TWIGS, SHOWING CORKY RIDGES

The younger branchlets are often conspicuously corky-ridged, but this is not an altogether dependable characteristic.

with the root system. When the leaf fell in the autumn each of these elements of the circulative system of the tree left its individual mark. These bundle scars, as they are called, vary greatly in number, shape, position and distribution, but are uniform for a given species. There may be one, three, seven, etc., arranged in a straight or curved line, or variously grouped. Unless one uses a hand glass for inspection the leaf scars of the elm and of the mulberry look very much alike. One is oval, the other, perhaps, a trifle more flattened. Both have several bundle scars on a depressed center of the leaf scar. But a closer examination with the glass reveals the fact that the bundle scars of the white elm are still further





HORSE CHESTNUT

The striking looking buds are one of the best means of identification.

depressed, those of the red mulberry raised like little pimples.

There still remains the bud which yields an equal if not superior amount of information. Some twigs have terminal buds, some twigs do not. Some buds are pressed close up against the twig as in the willows, others project outward at various angles. They vary in shape from almost needle-like as in the beech to nearly spherical as in the silver maple. The buds of certain willows are barely 1-16 inch long, those of some of the magnolias fully two inches in length. Every bud is covered with scales. Their size, shape, color, texture and arrangement are all important details which help to identify the species. For instance, the bud of the tulip tree is shaped like your thumb and covered with a pair of dark brown scales. That of the sycamore is also brown, but covered with one scale that

is sharply conical. Willows are also conical and covered with one scale, but the buds are small and pressed close to the stem, that of the sycamore large and divergent. The buds of the horse chestnut and the buckeye, two species of the same genus, may be distinguished by the fact that one is covered with sticky gum and the other is not.

The little breathing pores in the epidermis give rise to the spots known as lenticles. These are often inconspicuous by reason of their small size. At other times their conspicuous size,



WALNUT

The chambered pith is shown at the right.

color, texture and position constitute important marks of identification. The characteristic horizontal marks of the bark of the cherry are produced by the gradual elongation of the lenticles of the twig.

Prickles and spines grow from the epidermis. Thorns spring from the woody substance within. The presence of these, their size, shape and color determine a number of species. It is also important to notice whether they are spines or thorns.

Though the fruit of many trees falls to the ground in autumn, or is promptly eaten by the birds, its pres-

ence throughout the winter affords not only an assistance in identification but also material for study. Everyone is familiar with the sycamore balls that dangle aloft all winter. The birches frequently retain a portion of their fruit. The persistence of the keys of the box elder not only differentiate it among maples but also enables one to distinguish a male from a female tree.

I have by no means exhausted the marks of identification contained in the twig of a tree. But I have called attention to enough to justify my first statement: The winter is the best time to begin the study of trees. If one uses a key based upon these characteristics he can identify trees with a greater degree of certainty than he can in summer using a key based upon leaf characteristics alone. It is true, there will be difficulties, but the difficulties are fewer.

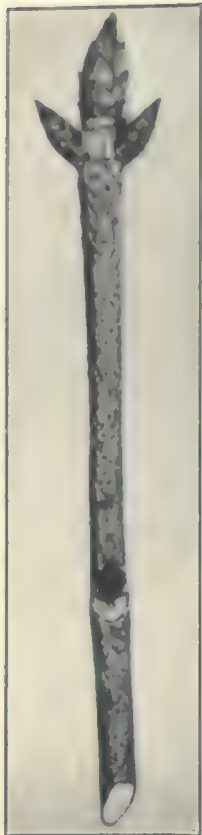
There is another distinct advantage in winter study. Probably no one who has read thus far has mentally called for a definition of winter. Yet I have not used the word in quite its ordinary sense. One need not picture to himself the arduous exercise of trudging through the snow in zero weather. In the tree world winter begins with the



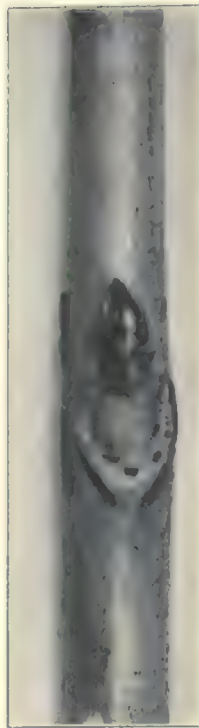
AILANTHUS

Showing a scar and lenticles or little breathing pores.





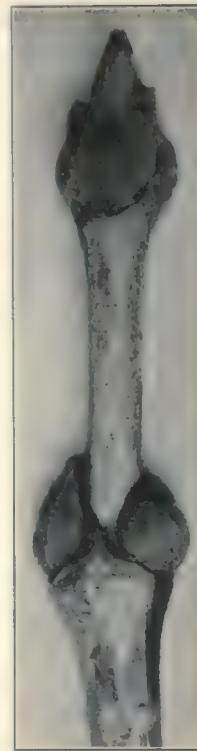
**BUCKEYE**  
Easily distinguished  
from the horse-  
chestnut bud.



**HORSE  
CHESTNUT**  
Showing a distinc-  
tive scar.

However, in winter we are alone with the trees and shrubs. One comes closer to them, gets better acquainted with them. I suppose it is a mere fancy on my part. But I know an ash, a walnut, and a maple so close together that their branches overlap a trifle. I have known them for a long time. Each is like a good friend. I think I know every limb any of those trees has lost in a dozen years. But, somehow, in summer their individuality seems impaired. I think of them more as a composite group, each concealing the good points of the others. And I cannot get so near them. A mere fancy, of course, but I welcome always the autumn wind which strips the concealing foliage and restores the individuality of my old-time friends.

I have spoken mainly of deciduous trees. But they do not involve the whole story. It is true the evergreens do not show so great a difference in their winter state. But



**BOX ELDER**  
Showing spur and  
terminal bud.

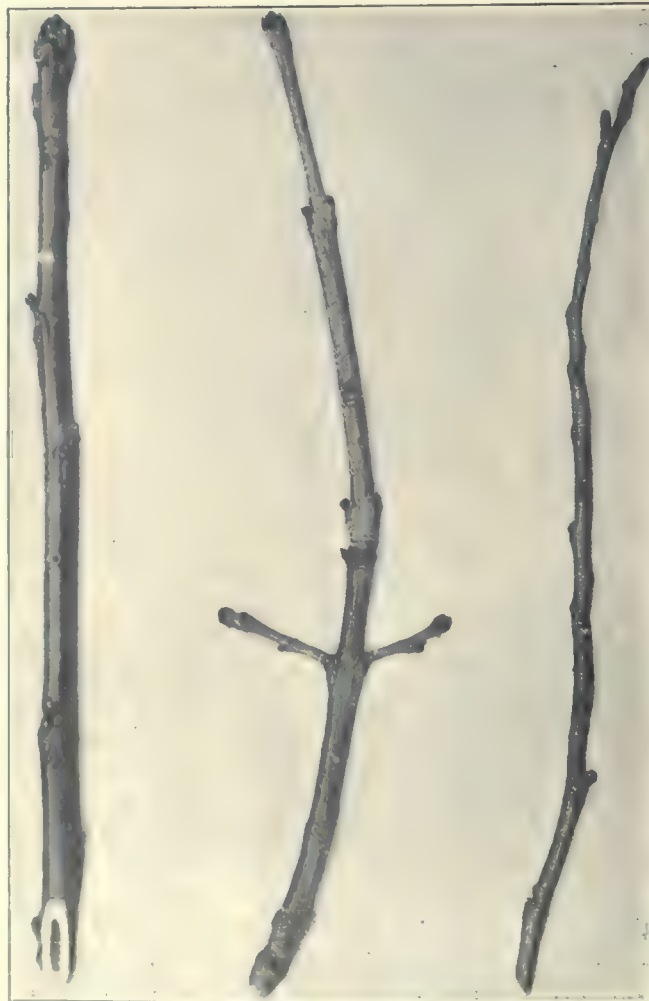


**CATALPA**

The twig is the best  
key to identification.

fall of the leaf in autumn and continues till the opening of the buds in spring. To all intents and purposes the twigs and buds remain quiescent throughout this long season. In other words, nearly half the year is winter to the trees. Compare this long season during which the conditions of study do not change with the short flowering period of the willows, or even the part of the summer that remains after the leaves are full grown.

There is, too, the distinct advantage to one who is fond of the woods and fields of opening a great opportunity for study and enjoyment during a season of the year so generally considered closed. Yet I would not urge the exclusive study of trees in winter. One may learn considerably more than half the story, but he will not learn it all.



**WALNUT**

**WHITE ASH**

**TULIP**

Illustrating the diverse appearance of the twigs of some of our most familiar trees in winter.

there is something else. Only the untrained eye is wearied by the monotony of the winter landscape, or is irritated by the absence of color. The color is there; not in so great a variety, not presenting such striking brilliancy, but, rather, soft and comforting. And how much of it is due to "the withering pines and the hemlocks."

In summer the evergreens do not put on their new coats so quickly as the other trees. In the outburst of deciduous foliage in the spring the evergreens seem somewhat to succumb to the youthful ardor of their many-tinted rivals. But later the tables are completely turned. The majestic conifers, with so much more ancient lineage, can afford to bide their time for Autumn, the season of their glory, approaches.



# THE ROYAL PALM

(OREODOXA REGEA)

By Hollister Sage.

**T**HE United States is not recognized as a hot country. Nevertheless, lower Florida is truly tropical. Although the peninsula does not extend into the torrid zone, it is nearer the equator than sunny Italy, Greece, the blue Mediterranean or even northern Egypt. Four hundred miles long, Florida's position is an enviable one, for the Gulf Stream flows on both sides of the state. That miracle-working river of warm water in the Atlantic, mystically takes its way with force unabated to

frozen Labrador and across the northern ocean, melting icebergs, making a safe path for the great liners and blessing two continents; but its influence upon Florida is super-natural.

If you have never viewed tropical plant life, the products of Nature unassisted, her vigorous and graceful spontaniety where freezing never interferes, let the wings of your imagination carry you to Miami, our most southern city. It has been given a musical Indian name.



Four Beautiful Royal Palms in Royal Poinciana Park. The Fifth, in the Foreground, is a Cocoanut Palm.



Here, midst Nature's most distinguished offspring, no single growth so deeply impresses the beholder, none so fixes itself upon his attention, none remains stamped upon his memory as does the Royal palm. Possibly you have never seen one of these princely trees, even under glass.

You alight from train or steamer and decide to see the sights. When first coming among these regal palms you notice a series of brownish-white pillars. You do not see their tops, as you are not star gazing. Involuntarily you direct your vision twenty feet higher, that you may see the tops of these singular columns and, failing, look up and up, in open-eyed wonderment. In ecstasy you behold a splendor of sea-green fronds outlined against fleecy clouds, or the ether. The impulse is to clasp the hands and to gaze, spellbound, in the attitude of devotion. You wish the car would stop and that all chatter cease, giving you an opportunity to comprehend the vision and regain your poise. Can these symmetrical, chiseled shafts be the boles of living trees? The wild witchery of the banyans attracts you, the lawless disorder of the cocoanut palms elicits your approval, your joyous acclaim, but the proud, calm majesty of this king of palms fills you with awe and reverence. You begin to speculate as to what may be



Above--One of the lovely spots in Royal Poinciana Park at Miami, where the Royal Palm --the Wonder Tree--is found in profusion.

Below--The South Florida Highway which has been greatly improved and beautified by the planting of young palm trees.



the office of this tree. Does it bear nuts or other food delicacies, or produce rubber, or fuel or turpentine, or logs for the sawmill?

The wonder tree offers to man no material gifts. Its mission is a distinct one, much greater than the production of foods and fruits. It is the ministry of things divinely beautiful, to console and lift up the soul of man, to heal his nerves and to impart a heavenly balm where the wear and worry of time and sense have lacerated and begun to destroy him. The balm of the Royal palm is invisible. But it steals into the soul, bringing peace and driving away care and fear.

Because of its grace and beauty, the tree is a universal favorite, coveted by everybody, but until recently its propagation has been shrouded in darkness. Ninety per cent of its seeds refused to sprout, and of those which germinated, ninety per cent died while mere seedlings. Buyers pay \$5, some \$25, and occasionally several hundred dollars apiece for choice trees, for they may be moved readily when very large. Where a wild baby Royal is found it will bear watching to learn how very soon it perishes. Perhaps one tree matures from a thousand seedlings. Men have wondered about these conditions for generations. But at last the secret of germination and growth has been discovered by a Miamian, Mr. W. A. Williams, owner of Royal Poinciana



Above--A bit of natural Southern Florida land, graced by the imperial beauty of three Royal Palms.

Below--Along the Miami River, adjoining Royal Poinciana Park, The Royal Palms are reflected in the serene and quiet water.



Park. After years of experimental work he has learned that the seed bed and nursery conditions must be exact, while enough moisture and not too much must be given to satisfy the imperial baby. The nursery is covered with slatwork and prepared layers of soil delight the young plants. Mr. Williams now has under cultivation something like fifty thousand, and hopes to be able to present the state with a sufficient number to set a double row beside the new Tamiami trail which crosses the peninsula to the Gulf Coast, a distance of ninety miles.

What men have long desired to know he modestly relates: "About ninety-five per cent of the seedlings perish; mostly soon after germination, although many reach a height of several inches. The single spear that first appears will wither before a hot wind or intense sunshine. At six or seven inches they seem disposed to break off at the surface. Benches entirely under control are the safest in which to rear the seedlings. Gravel must be the first layer, to provide drainage. Next two inches of clay or heavy loam to retain moisture. The entire surface of this is covered with the seeds to the depth of one-half inch. The seeds must then be covered with four inches of mulch or rich, light soil. Then we have to await the appearance of the slender spears patiently for ninety days, keeping the beds right with water at all times. If sufficient moisture is not provided the seeds do not germinate; if too much, they sprout and die.

"After the plants begin to show they must be sprayed often to keep down red spider and other pests and make the plants vigorous. After six to eight months growth in the original beds, the youngsters must be transplanted into pots and following this from time to time into larger receptacles, until they are eighteen to twenty-four months old. Then they may be set in the ground. The average man fails because he leaves the plants to care for themselves, which they cannot do. Many apply fertilizers, which burn them. Palms require fertile soil and will take some enrichment, but not until after they are fifteen to eighteen months old."

The habitat of the Royal palm is along streams and in moist places. It is found rarely at a distance from water. This palm reaches perfection in the wilds in Royal Palm Park, one of the unique possessions of the state. It is a primitive wonderland, comprising nearly two thousand acres, about forty miles southwest of Miami. Its situation is in the Everglades, that remarkable three million acre prairie which Nature has been working out during the past thousands of years. The park's proudest feature is Royal Palm hammock, on Paradise Key, a large "island" conspicuous in the landscape. Here in natural beauty grow hundreds of Royal palms to a great height, some exceeding one hundred feet. They overtop other trees and lift their star clusters to view proudly against the sky, while beneath them thrive many varieties of rare orchids and ferns. Botanists early discovered the wealth of rare flora on this hammock.

The efflorescence of the Royal palm is most remark-

able. In the vernal season a circle of bristling spikes or remarkable buds one foot or more in length appears upon the smooth trunk of the tree, almost within reach of a tall man. The owner, if new and unaccustomed to the tree, may fear at first that this excrescence is a "sport," inconsistent with the general harmony of his favorite and be disposed to remove it, until some day, possibly directly following the sharp and sudden down-pour of a tropical shower, he discovers the spikes have dissolved into an encircling fringe of graceful blossoms or seed pods. Unlike the towering maples and beeches of the North, these graceful trees do not require a century or more in which to make their growth and a like period to decline and disappear.

The world's largest paper machine is now being operated. It makes a stub of paper 12 feet, 2 inches wide, 327 miles long every 24 hours, using 110 cords of wood.

3,500 acres of pulpwood are required to furnish the paper for one day's issue of all the newspapers in the United States.



Wide World Photo.

#### THE NEW ELECTRIC DRILL AT WORK

One of the most important inventions of the century in connection with the care of trees—mechanical power in a new field. The important and tedious operations of the tree surgeon in digging out dead and diseased wood and boring holes for bolts with which to strengthen and support a tree are now, as a result of an invention of F. A. Bartlett, of Stamford, Connecticut, being done at a saving of anywhere from 50 to 200 per cent. of the time and effort formerly required. The power drill, one of the most important inventions in the art of tree surgery in more than a century, is run by electricity generated by the apparatus shown in the left foreground. This complete gasoline engine, generator and resistance coil outfit develops one-half horse power, weighs but slightly over 100 pounds and can be taken wherever there is a tree to save by modern surgical methods. The photograph shows the machine used as a drill and a bore.



# FOREST RECREATION DEPARTMENT

Arthur H. Carhart, Editor

## A FEDERATION OF OUTDOOR CLUBS

**M**ANY outdoor organizations with closely allied interests have for many years been working for similar objectives. The announcement that there is to be a convention in St. Louis the last week in April at which it is hoped to form a centralized federation is a giant stride in the right direction.

According to informal information the convention is to be called by Governor Hyde, of Missouri. It is to have as a presiding officer no less a figure in outdoor activities than Mr. Albert Britt, editor of "Outing." Many friends of the big outdoors have expressed their interest in the convention and under the leadership of these two men much that is good will undoubtedly be accomplished.

The announcement indicates interesting things and possibilities. The greatest of these is the fact that the members of the universal outdoor fraternity have come to the conclusion that there is to be a central organization where will be common meeting ground. A review of the past will show how necessary this is.

Naturalists, geologists, foresters, landscape architects, park boards, outdoor societies, forestry associations and many other groups of people are all interested in some phase of the outdoors. As a result many societies have been formed which have as their aim the advancement

of a certain field of outdoor work. This list might be indefinitely lengthened to take in hundreds of professional groups and popular societies interested in some phase of nature. Besides these there is a large group of sportsmen in the country who are vitally interested in many fields.

Each society has limitations in its scope of work. This has been necessary to accomplish results. If each had tried to spread over all outdoors there would have been little accomplishment in the past and a great deal of confusion.

But the various organizations in limiting themselves to one particular field of outdoor activities have often lost sight of the fact that certain phases of their work are closely linked up with those of other societies. The inter-relationship between all things outdoors has been lost in these clubs of limited fields because the study of detail is more engrossing to the human mind than is the study of the whole. It is more easily understood and more fully developed knowledge of a limited activity may be grasped by the enthusiast, whether he be a trained scientist working in that field or an amateur.

A few illustrations will serve to point out this mutual



JUST YOU AND YOUR NEIGHBOR ON A PICNIC.

Even the casual picnicker is interested in all things outdoors. He is therefore interested in the formation of an organization to promote its welfare.





#### THE BOTANIST

Flowers are the soul of many outdoor places. Of prime interest to the botanists, flowers and plants are an appeal to all.

lack of contact. The illustrations are not isolated but typical.

Game protective societies are deeply concerned with the wild life. Birds and beasts of the country, their life habits, their foods, their natural and artificial enemies

and many other features relating strictly to game hold their interest. The study of these problems is so engaging in many cases that the relation of these problems to ones similar in other fields is lost sight of.

The forester has to do with life habits of trees, their natural enemies, their culture, increase, perpetuation and



#### MOUNTAINEERING

The mountaineer will have a better trip if he can recognize the flowers, trees, rocks, insects and other natural things along his trail to the peak tops.



#### THE MOTOR GIPSY.

How dependent the motor gipsy is on other fields of outdoor work! The very essence of his enjoyment lies in the protection of the forests, the protection of wild game and other natural beauties.



like problems. Those who deal with trees are essentially interested in trees. The field is of such scope that one man or even the whole group of men interested in it find enough to wholly engage their attention without going outside of its limits.

But here is a typical example of one field of work being very closely allied to the other. Wild game of all kinds is very materially dependent upon the forests. Without a good forest cover much of the game is lost. A barren, dry waste is not a place for game. A forest guarantees against such a waste and gameless tract.

In another particular the forester and the game enthusiast are vitally mutually interested. That is the fire problem of the forests. Fire kills forests. It kills game

The reverse is true. Undoubtedly the foresters, working in the presence of wild life, have information that would be of value to the men working on problems of game protection.

Looking at this particular example from the viewpoint of the game enthusiast we find that there is a decided lack of understanding on the part of sportsmen as to the work of the foresters bearing on game problems. Foresters are responsible as a profession for the greater protection given our forests. They have been instrumental in conserving them and turning the tide from irrational cutting and wastage to a well organized policy of rational use through true conservation. Immense quantities of game have been protected by and are dependent



#### NATURE LOVERS

Nature lovers surely have a lot for which to thank the workers in other fields. The forester, geologist, entomologist, botanist, and in fact, practically all specialized fields of outdoor work contribute directly to his knowledge and enjoyment.

at the same time. The enemy of game is also the enemy of trees. It is to the interest of both the foresters and the game protective organizations to fight forest fires.

In the past there has not been the meeting ground that should be common to these divisions of outdoor work. The foresters have known of game problems and have in many instances taken deep interest in and gone far towards solving them. But there has not been the contact that there should be on the part of the foresters with the work being done by the game protective clubs. It is wholly probable that much of the information that has been amassed by the game clubs would be invaluable to the forester in the studies of game conditions. If such an exchange of ideas would have been possible a great amount of past useless effort would have been prevented.

on these forests. It is probably true that the bulk of the big game of our nation is now within the borders of organized forest units.

If it were possible to bring home to the game protective clubs that they are vitally interested in the forests, their administration, protection and proper conservation there would be a direct move on their part towards the full accomplishment of such a constructive program. Because of their interest in trees? Not especially, but rather because the work in the forests has a direct relationship to the game problem. Trees mean more game. Forest work means more and better trees. Game protective societies are therefore interested in forest work.

Up to the present time there has been no meeting ground of these two great divisions of outdoor activities



so that one may learn how dependent it is on the other. There has been no place that will act as clearing house for the information secured by each working independently. If such a field for parley had been established a decade ago each activity would be further along now because of the understanding arising from conference and because of the opportunity to compare notes.

There is a lack of correlation and coordination among societies interested in game. Audubon society work is aiding and abetting work similar to that carried on by many local game and fish clubs. The Bison Society is in game protection in a very limited field. Their experience is none the less valuable for they have undoubtedly met and solved problems that are now confronting scores of other game protective agencies. There is some exchange of opinion among such societies, particularly among the heads of the organizations, but the mere member has little touch with what is going on in fields that parallels his interests.

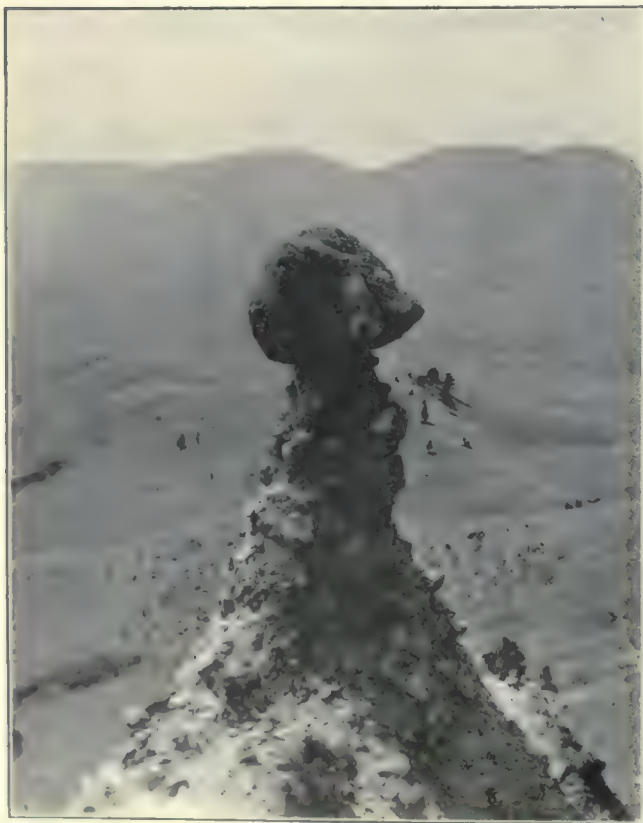
Just in this single achievement, a field of common meeting, this proposed federation will accomplish immense benefit. It will be a place for exchange of ideas, will educate one group of workers in the work of the other groups and thus move efficiently to the accomplishment of all of the objectives of each field of endeavor.

The Federated Outdoor Clubs of America, properly organized and under proper direction, will be one of the greatest benefits that could come to lovers of the out-



#### GEOLOGISTS

This curious formation is the "Totem Rock" in the Colorado National Forest.



#### A GEOLOGIC STUDY

Geological forces as are demonstrated in the forming of freak rock are of interest to every one. In such the forces of nature are brought especially to our

doors, our broad landscapes and their inhabitants—the trees, flowers, beasts, fish and birds. It would stand for true conservation of our wild life. There would be a modifying of extremes of over use or over protection. A true conservation program affecting all outdoors could be worked out and applied with this federation sponsoring it. It would mean that the peril of raiding of national natural resources for the benefit of a few at the expense of many would never lift its head without a strong champion of rational conservation picking up a cudgel against it. This would be because each group would come to know how dependent one outdoor factor is on the neighboring factor and the enemy of one would be recognized as the enemy of the other.

This federation will be in politics but not a political machine if it is to do its most good. Today an isolated group of the outdoor fraternity strives to advance one scheme for protection of some natural resource through legislation. It is an uncorrelated move to produce good for one division of outdoor activities. A small group is behind the movement and it is often lost because of non-support.

But often indeed that very legislation has a direct bearing on the work of another field of outdoor use. The only reason that other agencies, or in fact all outdoor clubs do not put their shoulder to the wheel with the group initiating the move is because first it is not clearly understood that the legislation is of benefit to all and second it is probably not known by other groups that it



is contemplated. The combined power of the federated outdoor clubs will represent the digested and crystallized opinion of some of the best thinkers in our country in their various fields of outdoor work. It will be a meeting ground at which the relationship of every move to the good of the whole will be tried out and if good will be stamped with the approval of the federation and receive its support.

Legislation that has long been needed, legislation that has been sponsored by a limited group of lovers of the outdoors, legislation that does particular good in one outdoor field but which has a direct bearing on many, will thus be made possible through the unbiased actions of the federation. The harm that will be done by such a federation is practically nil. If there be harm in it it is not apparent on the surface. The greatest menace to the entire idea and the structure is the securing of the balance of power in it by one group that has some selfish, partisan motive behind their activities. This is the only way that it would seem possible for the federation to become anything but a great movement for good.

It will be opposed by certain groups. It will be fought by those who expect to get something from the natural resources of the country for their personal benefit. Those in political power may try to wreck it for their own ends. But if there is a real core of genuine Americans in such an organization, a public-spirited group of genuine lovers of our great outdoors, it will take considerable pressure, unusual craftiness or other insidious force of moment to smash the organization.

The Federation of Outdoor Clubs of America or whatever agency may gather together and mould into one great purpose all the effort of the outdoor clubs of the nation, has its work cut out for it. It has an opportunity to do a great service to mankind and especially to the members of the organization within the federation. Only a debasing of ideals, a manipulation of its power to private or partisan ends will make it anything but a national force for good. Its work first consists of educating its own federated members as to what they, in their various

organizations are trying to accomplish. Second, it will then have to educate these same people in the relationships which exist between all outdoor activities. The interdependencies of all of the various children of nature should be brought home to all that all may see they are naturally related. After educating the federation members there is the immense field of education to be covered with the general public. The combined efforts of all will go further towards increasing the knowledge in each division of outdoors than the unaided efforts of a single organization. The opportunity for good in this field is almost unlimited. There is scarcely a thing done compared to what should be done and there is needed a centralized, strong force to bring about this general education of the public now so earnestly sought by each outdoor club working alone.

The federation has been pointed out as an ideal medium of exchange of ideas. Its bulletins or publications should always carry either a digest of all of the best articles, reports or pamphlets issued by various outdoor agencies or at least a list of such articles.

Finally, the great power of the federation to bring about good through directing constructive legislation can hardly be estimated. When its members can see that it is really "all for one and one for all" in the outdoor activities everyone will cooperate to bring about constructive legislation or to kill completely, destructive, malicious attempts to raid the outdoors.

The whole move has a direct bearing on forest recreation. Outdoor recreation is but a human use of the rural areas whether in forest, lake or field. It is recreation that brings many in contact with nature and her children. Outdoor recreation cannot but benefit from a thorough understanding of all outdoors by all people interested, for it is touched by practically every field of outdoor activities. But it is believed that this is so of every outdoor activity. Each must benefit from benefit to another. The federation cannot do otherwise than help all.

## WOODLAND MAGIC

Up in town, when Jones is dining,  
Nothing seems to please his taste;  
He's a poor dispeptic, whining  
At each dish before him placed;  
He's a cynic, culinary;  
Analyzes every bite,  
And he eats like a canary,  
For he has no appetite.

But in camp, when bacon's broiling  
In a grease-bespattered pan,  
And he sniffs the coffee boiling  
In a battered, blackened can;  
When he scents the smoke emerging  
From a blaze of pungent pine—  
Then his palate needs no *urging*,  
And his appetite is *fine*!

Up in town, when he betakes him,  
Drowsy-lidded to the hay,  
Sleep, the goddess, doth forsake him  
In a most provoking way;  
He can turn and twist and mutter;  
Fuss and sputter—but alack!  
Sweet repose has vanished utter  
From the poor insomniac.

But when balsam boughs are scattered  
On the woodland's balmy breast,  
And a blanket, mud-bespattered,  
Forms the haven of his rest,  
He can lie down, without fussing,  
Near a water-fall that roars,—  
And keep everybody cussing  
With his loudly booming snores!

—JAMES EDWARD HUNGERFORD.



# In The Giant Forest Of The Sierras

By Alexander Blair Thaw

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Ye first of living things!  
Ye that were goodly trees  
When the great King of Kings,  
Building his garden wall,  
Brought down to Babylon,  
Upon her streams the tall  
Cedars of Lebanon.

Ye mighty trees!  
Ye which are first, of all  
Kings of the wildwood!

Over the earth and seas  
Here we are come at last,  
Weary with wanderings,  
Down at your feet to fall;  
Here, by your mountain springs,  
Silent and all alone,  
Through the long ages past,  
High on your granite throne  
Ye stood in your glory.

Mighty ye grew in girth,  
Brother by brother  
Bending your mighty knees  
Down to the lap of earth,  
While the great mother  
Still to your listening ears  
Whispered her story,  
Tales of our wandering years,  
Tales of our childhood.

Ye guardians who treasure  
The gracious gift of rain,  
And still pour forth again,  
Age after age, and year on year  
In bounteous measure,  
Your everlasting fountains!

Up to these mountains,—  
Where evermore you stand,  
Great sentinels  
O'er all this virgin land,  
Guarding your sacred wells,—  
We come, to drink of these.

Close by the tree of life  
The tree of knowledge grows;  
And, through our wars and strife,  
Up from the world's deep woes,  
Where the dark roots entwine,  
Is born the Word divine.

Out of much suffering  
Still those mute altars rise,  
Where perfect love shall bring  
Life's willing sacrifice,  
And little children bear  
Earth's holy promise there.

Now, through the least of these.  
Heaven on earth is come;  
Now the dark forest trees  
Speak, and no more are dumb,  
And a child's heart shall be  
Fruit of this fertile tree.

Hark, in this burning bush,  
Brought from the silent grove,  
Out of that holy hush  
Wakens the word of love,  
Which o'er the world, new-born,  
Hovers, this happy morn.







# TOWN FORESTS

By J. W. Toumey.

Dean of the Yale Forest School

(Address delivered before the Massachusetts Forestry Association.)

THE two broad classes of forest ownership are private ownership and public ownership. Most Americans know something about public ownership due to the establishment and the placing under management of more than 150 million acres of National Forests within the past thirty years. When we Americans speak of public forests we think of the National Forests. However, some of the states in recent years have established state forests. Here we have another kind of public ownership. In states like New York and Pennsylvania, with a million or more acres owned by the state, public forests convey the idea of state owned forests. Nowhere as yet in this country does the idea of public forests bring to the mind of the average citizen, community owned or town-owned forests. As a nation we emphasize National Forest ownership. We are beginning to talk about state owned forests. We have scarcely begun to think in terms of town-owned forests. Yet with all this the town, a relatively small governmental unit, is in position to derive more pleasure and profit from a well managed forest of its own within reach of its population than can be derived from either a state or a national forest.

We should in this country, begin to think in terms of public forests owned by communities; that is, by towns, cities, schools and similar organizations that have an indefinite lease of life and which society has established for its own protection and welfare. We in this country differ from Europe in the way we look on communal forests. Over there, at least in many countries, instead of public forests being almost entirely under national and state ownership as they are here, a relatively large percentage is owned by towns, cities and other local organizations. The benefits derived from them are real and personal. These benefits can be experienced and appreciated much more than is the case with the benefits derived from national or state forests. For instance, every citizen in a town that owns a productive forest has not only the privilege of enjoying the forest in recreational pursuits, but he receives a dividend from the earnings of the forest in the form of remission of taxes. He is directly benefited by the protection which it affords and by the products which it provides. Not a few towns that own productive forests in Switzerland and Germany escape all town taxes due to the fact that the revenues derived from the forests are sufficient for the entire support of the towns. In the older countries of Europe communal forests are usually favored by the public over other kinds of public forest ownership.

In this country the bulk of our publicly owned forests is national. A limited acreage is owned by the states, and practically none at all is owned by the towns and similar communities. Switzerland has 67 per cent of all her forests under town or other kinds of communal own-

ership. Almost every city and town, almost every school and poor house, almost every church, owns a near-by forest managed for production of forest products, but also serving for protection and available for recreational purposes. Many of these communal forests are among the oldest managed forests in Europe. Some of the cities and towns, as illustrated by Zurich, spend as much as six or seven dollars per acre each year on their management and improvement. Yet they derive from them a net annual revenue as high as eight dollars per acre which goes toward the relief of taxation.

A few years ago Germany had 16.1 per cent of her total forest area in corporation or communal forests, largely owned by cities and towns. Many of these forests are among the most productive and the most celebrated in Germany, as illustrated in the town forest of Baden Baden and the town forest of Forbach, both in the celebrated Black forest region. Most of the town forests in this part of Germany were a few years ago, and are probably now, in a high state of productivity. Although located in rough mountain country, where the soil is wholly unsuited for agriculture, they sustain thriving permanent communities and yield a net annual revenue often exceeding eight dollars per acre, and in some instances, as is the case with the Forbach forest, as high as twelve dollars.

The old world has found that town forests pay not only in affording recreational opportunities and protection, but in the revenue derived from the sale of forest products. Old world cities and towns find it on the long run the part of wisdom to pay all the way from \$80 to \$300 per acre for forest property to be held as town forests. No one hears of town forests being disposed of to private owners, but one constantly hears of new town forests being acquired either by gift or purchase. In America our cities and towns, as well as other communal organizations, have entirely overlooked, up to the present, the great opportunities for forest ownership which lie at their very doors. Thousands of acres of idle forest land can be secured, often not far from cities or towns, often as low as from five to ten dollars per acre, with correspondingly higher prices for land partially or fully stocked.

Before the war, I gave some time and inquiry to the subject of city, town and school forests in this country, and from the data collected in ten states, where approximately 130 thousand acres of forest property was owned by sixty-seven communities, I came to the conclusion that a total of 250 thousand acres of communal forests for the entire country was a very conservative estimate. Since then no doubt the area has increased somewhat, but to what extent I do not know.

I believe it is safe to make the prediction that in the

(Continued on page 113)



# BLISTER RUST APPEARS IN THE PUGET SOUND REGION

By S. B. Detwiler

**T**HE first evidence of white pine blister rust was found last September, when diseased cultivated black currant bushes were located at Vancouver, B. C., by the Provincial plant pathologist. The scouting which followed brought to light infected cultivated black currants at a number of points on Vancouver Island and on the mainland as far south as Chilliwack, B. C. A few infected planted white pine and Cembra pine were found at Vancouver. In the State of Washington, during November and December, rust-infected cultivated black currants were found near Sumas City, Mount Vernon, Everett and Port Townsend. At Mount Vernon three small western white pines showed signs of young cankers.

The presence of diseased black currants is a serious matter because it is only through the agency of currant or gooseberry bushes that the blister rust spreads from one pine tree to another. Fortunately, in the Puget Sound region, to which the rust infection appears to be confined, planted white pines are few and the native western white pines are sparsely distributed, forming less than one per cent of the forest. Wild currants and gooseberries are present throughout this region, but the one that is most common is known to be highly resistant to rust infection. Plants of other species are scarce except in marshy places.

All kinds of currants and gooseberries harbor the rust to a greater or less extent, but cultivated black currants are particularly susceptible to infection. At practically all points where the blister rust was found in the Far West, it was confined entirely to cultivated black currants. Only two bushes of wild currants were found diseased out of thousands examined, and the majority of black currants examined were free from the disease. This fact, and the age of the cankers found on the diseased pines, indicates that the blister rust was introduced recently. This is borne out by failure to find the disease previously, although considerable scouting has been done each year in the Puget Sound territory since 1917. At Vancouver the rust was present as early as 1916, before the establishment of the quarantine pro-

hibiting shipments of nursery stock of white pines, currants or gooseberries.

A conference to consider the best means of dealing with the blister rust situation was held at Portland, Oregon, on December 19-20, 1921. The conference was called by H. P. Barss, chairman for the Western Advisory Board of American Plant Pathologists, and was composed of about seventy-five representatives of lumbermen's associations, forestry and conservation associations, state foresters, agricultural commissioners, plant pathologists, railway officials, nurserymen and timber owners. Officials of the Canadian and British Columbia governments and members of the United States Department of Agriculture were in attendance at the invitation of the conference. The conference first

gave consideration to all available facts on the situation, and through a number of committees, worked out a plan of action uniting national, state and private agencies toward preventing the further spread of infection, and if possible, to stamp out the disease entirely on the Pacific Coast. Some of these measures consist of additional quarantine restrictions in Washington and British Columbia, the general destruction of cultivated black currants as a public nuisance in the Northwestern States, and the conduct of necessary investigational and scouting work as soon as possible. Cultivated valleys and a wide arid belt form a natural barrier to the spread of the rust from the Puget Sound region to the



principal commercial white pine forests of Idaho and western Montana. British Columbia has already placed the needed quarantines, and is contemplating scouting and other action to determine the best means of cooperating effectively with the western states.

The Western spirit of cooperation prevailed at the conference. The Pacific Coast Nurserymen's Association and railway officials offered aid in scouting for the disease and in quarantine enforcement. Several nurserymen voluntarily offered to destroy all black currants and white pines in their nurseries. State officials in Washington, Oregon, California, Idaho and Montana offered the serv-



ices of nearly one thousand employes to aid in control work for short periods aggregating about twenty thousand man-days and valued at \$70,000 to \$80,000. Forest fire associations offered similar help during periods when weather conditions permit. Lumbermen's associations stand ready to contribute funds and any needed assistance, as well as exterminating any blister rust infection found on their own or adjacent holdings. A committee consisting of W. D. Humiston, chairman; C. A. Clark, H. P. Barss and C. S. Chapman as executive secretary, was elected to carry out the plans of the conference. The general sentiment was that the situation was serious, but had many hopeful elements, and that prompt action will prevent general infection such as has occurred in the East.

The situation in the eastern white pine area is both darker and brighter. It is darker because the spread of blister rust infection has been so great during the past few years that the disease is now general throughout the white pine regions of New England and northeastern New York, and portions of Wisconsin and Minnesota.

## OUR VANISHING TIMBER SUPPLY A SERIOUS PROBLEM

**T**HE outstanding points in our present serious situation as to timber supply are the disappearance of three-fifths of the virgin forests of the country, a present drain upon our remaining forests over four times their yearly production of wood, and the accumulation of enormous areas of denuded and idle forest lands," says Chief Forester W. B. Greeley in his annual report to the Secretary of Agriculture.

"The past year," according to the report, "has been notable for general discussion of the forestry situation in both its national and local aspects and the consideration of remedies. To a considerable degree this discussion has centered around proposed measures of Federal legislation.

"It is increasingly evident," says Colonel Greeley, "that whatever legislation may be enacted and whatever governmental agencies may be involved, two principles must be recognized in putting the United States upon a self-sustaining basis in timber production. The first is that, because of the long-term nature of timber crops and the foresight necessary to meet future national needs, the public has an interest in forest lands not common to most forms of private property and most comparable to its interest in the operation of recognized public utilities. This public interest must be satisfied in the manner of handling forest lands. The second principle is that the production of timber is an economic process, governed by economic laws.

"The State or the Nation may insist that forest lands be productive rather than idle; but in so doing it can not avoid its own responsibility for reducing the general risks and losses attendant upon timber production, which have often made it a hazardous or unprofitable undertaking. The two outstanding respects in which public co-operation with the land owner is necessary, as a

The bulk of the white pines are still free from infection, but it can be found in almost any pine lot north of a line running from Boston to Lake George. The infection that hit the pines in 1919 was heavier than ever before, and the results will be serious to the pine in the infected regions if currants and gooseberries remain in proximity to the pine. The principal danger lies in pine owners remaining in ignorance of the true conditions until it is too late to save the existing pine crop.

The bright side of the situation is that the results of control work done in 1916-18 prove conclusively that the blister rust can be effectively controlled at moderate cost. The methods are simple to learn and any white pine woodlot may be protected. All that is required is to pull up wild and cultivated currant and gooseberry bushes that grow within 900 feet of the pines to be protected. Investigation during the past year has shown that this action is entirely effective in preventing further ravages of the blister rust in those areas where the work was done systematically.

cotollary to regulating the use of his property, are organized protection against forest fires and the adjustment of taxes on timber lands so as to secure their employment for growing successive crops.

"The Forest Service has initiated this year an important step toward the restoration of America's forests," declares the forester. "This is a comprehensive study of the requirements in protection and reforestation necessary to keep forest lands productive in each important region of the United States. This study has been undertaken in co-operation with the State foresters, timberland owners, representatives of forest industry organizations, and forest schools. Its purpose is to put in concrete terms just what 'forestry regulations' mean, in the southern pine belt, Appalachian hardwoods, or the Lake States. Instead of dealing in general terms, it will bring the forestry movement down to specific things which are to be done in the woods, as minimum standards.

The subjects for Federal legislation now most urgent, according to the Chief Forester, are:

(1) The extension of Federal cooperation in the protection of all classes of forest land from fire; such co-operation not to be limited to the watersheds of navigable streams, as at present, but to be available on all forest lands within States prepared to join in co-operative efforts. (2) The extension of public forest ownership by incorporating within National Forests public lands not under Federal ownership or control which are adapted primarily to growing timber or the protection of watersheds; by acquiring cut-over forest lands within or adjoining National Forests through exchanges; and by purchasing forest lands with a view both to the protection of navigable watersheds and to the restoration of forests on areas now denuded and idle.



# BROAD-LEAVED EVERGREEN SHRUBS FOR THE SOUTH

By F. L. Mulford

IN passing from northern Canada southward, there is a transition from forests composed almost entirely of coniferous evergreens to those in which there are a large proportion of deciduous trees, while along the Gulf of Mexico many broad-leaved evergreens are found mingled with the others. Where the country is covered almost exclusively by coniferous evergreens the firs and spruces largely predominate. When the latitude is reached where many deciduous trees are to be found the pines and hemlocks become the more prominent species, but where the broad-leaved evergreens appear plentifully in the native vegetation only a few species of coniferous trees are to be found.

Wise planters observe these natural tendencies and adapt their planting schemes with these facts in mind. The style of the design and the purpose of the planting is of course of major importance, but on the other hand all plant material must be adapted to the place where it is to be grown in order for it to succeed. If a strictly formal planting is to be made the natural conditions may often be so modified that entirely different plants may be grown than could be grown under the usual conditions of the immediate neighborhood. Formal land-

scape design presupposes adequate gardening attention and skill in maintenance so that unusual plants for the neighborhood may be successfully grown where it is more appropriate for the effect to be produced that these should be used. On the other hand, where only a minimum of care or skill is available for maintenance then informal design with native and other easily handled material is almost imperative.

There are many intermediate gradations of relationship between the strictly formal design with strictly formal plantings and the informal design with informal plantings as for example the formal design in which the details of the plantings are informal. In spite of the plantings in such a design being designated as informal they must have much more attention than informal plantings in an informal design. Although a spirit of informality is admissible in such plantings, on the other hand the plants are closely associated with formal lines and therefore may not become too rampant for their location and yet on the other hand must not lag unduly or there is an apparent gap that spoils the effect. Although less work is required to maintain such plantings than strictly formal ones a high degree of intelligence is needed



AN OLD-FASHIONED GARDEN WITH BOX-EDGED WALKS

The dwarf box is intimately associated in the common mind with the delightful old-fashioned gardens found on so many of the old colonial homes in the South, where it is almost invariably found edging the fragrant, spicy flower beds.





A GOOD INDIVIDUAL SPECIMEN OF THE TREE BOX

The tree box is often used as a hedge in gardens, but is quite as well adapted to clump or individual use, the foliage holding its beautiful, shiny color throughout the year.

and the plants must be well chosen for the conditions to be met.

In the Southern States as in other parts of the country plantings should include a liberal amount of evergreen plants so that the winter landscape will be interesting as well as that of other seasons of the year. Although the shorter winters make a shorter season in which the deciduous plants are without foliage than farther north yet the season of denuded branches is sufficiently long to require attention especially when planning for home surroundings. Then too, frequently balmy days during the season seem to make a special appeal for foliage to be in evidence. Although the coniferous evergreens native to this region are comparatively few and introduced species that succeed are correspondingly scarce, yet there is a wealth of attractive broad-leaved evergreens that more than compensate for the few species of the conifers that do well under the conditions.

One of the best known of this class of evergreens for the south is the box. This is associated in the minds of all with the old time gardens and is to be found in many of those that date back a hundred years or more. It is not exclusively a southern plant as it will grow even in New England in favored spots. There are two distinct types; the one popularly called box bush (*Buxus suffruticosa*) being a low growing shrub with small leaves, but with age some times attaining a height of seven feet, the other called box tree (*Buxus sempervirens*) is a much larger shrub with longer and relatively narrower leaves, though with age sometimes attaining a height of fifteen feet. The foliage of the dwarf box is a lighter

green than that of the tree box, but both are rather shiny and keep their characteristic color throughout the season, not varying as with many evergreen plants. Both plants are largely used for hedges and are also well adapted for use as clumps and as single specimens. The tree box has been used as a hedge in many of the old gardens and through neglect at some time in their life the bushes have grown clear above the walks and covered them over, leaving the walk in an arch of green. From the walk the trunks and branches of the bushes may be seen with the foliage beyond, while from without there is simply the mass of green foliage. These plants both withstand pruning well, and will even recover from very severe pruning. They are of slow growth and for that reason are often of more value than more rapid growing plants.

Another of the better known broad-leaved evergreens is the azalea. There are two distinct types of these plants grown in the south. One is the dwarf hardy evergreen azalea (*Azalea amoena*) a low shrub two to three feet high with small leaves that turn bronze in the winter. The plants are thick and bushy and form good, low ornamental hedges. The flowers are purplish red, borne in great profusion during a period of nearly or quite three weeks. It is hardy all through the south and north into New England. The other type is the Indian azalea (*Azalea indica*). This species has a large number of varieties that vary from white to all shades of pink, red and purple, with splotched and striped forms in both single and double flowers. The leaves are much larger than in the dwarf azalea and a dark green. There is a great difference in the hardiness of the different varieties, one of the sub-



DWARF EVERGREEN AZALEA

This is a low shrub (*Azalea amoena*) splendid for ornamental hedge use. The plants are thick and bushy, with purplish red flowers and small leaves that turn bronze in winter.



species known as *alba* being hardy as far north as Boston, but many of the varieties will not stand the conditions far from the South Atlantic and Gulf coasts. Some of the varieties, with age, under favorable conditions, attain a height of twenty feet or more, while others normally attain a height of only six or eight feet. There seems to be little information available as to the different varieties and practically no firms attempt to handle named varieties of the types common through the south. The named varieties on the market are largely of recent European origin or at least of recent importation. It would seem well worth while for a study of the existing varieties to be made and the best of them to be propagated and put on the market in a systematic way.

A favorite evergreen in the warmer parts of the south

from Wilmington, North Carolina, southward along the Atlantic and westward along the Gulf of Mexico is the

Camellia (*Camellia japonica*) known widely as Japonica. Camellias are handsome, sweet-scented flowers in white and various shades of pink and red, with various mottlings and pencilings in single, semi-double and double forms. They are waxy in appearance and the leaves are a bright shiny green.

The American holly (*Ilex opaca*) is an evergreen tree that is well known throughout the south, where it is native, and in the north, where it appears on the market in large quantities at Christmas time for decorations. Although this makes a large tree it can be used where a hedge is

desired, as it will withstand severe pruning well. However, where a shrub or smaller growing plant is desired



THE LARGE EVERGREEN AZALEA

The beauty of the azalea in bloom, which is luxuriant and persistent. The foliage turns a rich bronze in winter.



EVERGREEN PRIVET AMONG DECIDUOUS SHRUBBERY

Keeping the garden places green all winter, this shrub is familiarly known by its thick, dark, shining leaves and its beautiful berries, which attract the birds all winter.



than the American holly the English holly (*Ilex aquifolium*) may be used. This will hardly attain a height of over twenty feet and it has the same lustrous foliage. There are many named varieties of the English holly each with different shape of leaf or habit of growth, so that almost any reasonable desire could be gratified. In general, however, the leaves are very much like the American holly and it has the added attraction of bearing red berries in even greater abundance than the American holly. It, like the American holly, bears the staminate and pistillate flowers on different plants so that to insure berries it is important to have both sorts of plants close to one another. These may be obtained either by purchasing trees that have been grafted from trees that have the characters that are desired, or by selecting the appropriate plants after they have reached sufficient size to flower and show their characteristics. This holly is not hardy much north of Washington.

The Japanese holly (*Ilex crenata*) is a small holly that has many small branches more suggestive of the Japanese barberry than the other hollies in its general character of growth. The leaves are small, suggestive of boxwood, and wavy edged instead of being sharp toothed. The berries are black and therefore not showy like those of the other two plants just mentioned. An attractive native holly is the Yaupon (*Ilex vomitoria*) or cas-sena that is much used along the Gulf as a hedge plant and also makes an attractive individual specimen. Its leaves are wavy edged like the Japanese holly without the prickles of the English and American hollies. They hang on until the new leaves are about to appear, so it is hardly a true evergreen. The berries are scarlet and very abundant. It is native near the coast from Virginia southward. It attains a height of twelve or fifteen feet. Another similar native holly is the Dahoon (*Ilex dahoon*), which also has spineless leaves that are shed just as the new leaves appear. It is native farther inland than the yaupon as well as in the same area. This, too, makes almost a small tree. Another native holly that is truly a shrub is the gall-berry or ink berry (*Ilex glabra*). This is a true evergreen with

dark shining leaves. It grows to a height of two to four feet and has an abundance of black berries.

In order to successfully transplant the American holly it is essential that all the leaves be removed at the time of transplanting and the same practice should be followed with the other native hollies and it would probably be best to treat all the hollies in the same manner unless it is possible to get nursery grown plants with unusually good balls of earth about the roots.

The evergreen euonymus (*Euonymus japonicus*) is a dense upright shrub with large, glossy evergreen leaves with slightly wavy margins. It attains a height of eight feet, but is rather formal in outline. The leaves hold their lustrous color all through the winter even as far north as New York City. There is a form that has leaves variegated with golden yellow. Where a variegated plant is warranted this is one of the best. There is also a dwarf form with small narrow foliage known as the small leaved evergreen euonymus (*E. japonicus microphyllus* or sometimes *E. pulchellus*). It is useful in foreground planting or for low borders or hedges.

The Japanese privet (*Ligustrum japonicum*) is very similar in appearance to the evergreen euonymus just mentioned and has similar uses. The leaves, if anything, are somewhat darker and sometimes the mid-rib and margin are reddish. The flowers of this shrub are almost white, followed by bluish black berries. It will ultimately attain a height of twenty feet or more. Another Japanese privet is *Ligustrum*

*lucidum*, which has thick dark shining leaves that are also very attractive. It does not get quite so large as the one just mentioned. Another smaller Japanese privet with immense dark green leaves is *Ligustrum microphyllum*. This attains a height of 12 or 15 feet.

Among the best known of the characteristic southern plants to the casual visitor is probably the cape jasmine or gardenia (*Gardenia florida*). This is a small shrub with dark glossy green leaves and exceedingly fragrant, handsome white flowers. The shrub attains a height of six feet and bears flowers all summer. It is not hardy north of the coast region of Virginia and the less mountainous sections of Tennessee. There is also a dwarf



THE HOLLY-LEAVED TEA OLIVE

This is found hardy as far north as Washington. The edging is the variegated form of the creeping euonymus.



form known, *Gardenia radicans*, that is most useful where a low plant is desirable.

The Carolina cherry or the mock orange of the south, especially of the Carolinas (*Prunus caroliniana*) is a small evergreen tree with rather large dark green leaves. It bears panicles of small white flowers in spring which are followed by small black berries in the fall. It is adapted to planting as single specimens, in clumps as screens or back grounds, and also as hedges as it responds to pruning well. When permitted to grow as a tree it will attain a height of more than twenty feet. In some of the towns in South Carolina it is occasionally found as a street tree, although it is too small a tree for this purpose.

The Tea Olive, Sweet Olive, or Fragrant Olive as it is variously called (*Osmanthus fragrans* or some times *Olea fragrans*), is valued for its very sweet odor in connection with its clusters of rather small white flowers and dark evergreen foliage. It should be used where a plant under six feet in height is desired. A close relative of this is the holly-leaved olive that has leaves much like the holly and whose habit of growth is similar to the English holly. This plant bears fragrant small white flowers in autumn. It is hardy as far north as Washington, while the tea olive is not hardy much north of Wilmington, North Carolina.

The Japanese laurel or aucuba (*Aucuba japonica*) is another low growing plant that is useful for home ground planting. This also attains a height of about six feet under favorable conditions. It pre-

fers partial shade and an abundance of moisture. There is a variegated form that is probably better known than the type or green form. This is beautifully marked with yellow and when used sparingly either with the green-leaved form or with masses of other evergreens attractive results can be obtained. It is well to plant the aucuba in groups so as to insure having both pistillate and staminate plants in order that they may bear the showy scarlet berries that hang on for a long time. This plant seems to withstand city conditions remarkably well. There is another species, *Aucuba viridis*, with narrow leaves and more dwarf habit, which is hardy as far north as Washington.

The English or cherry laurel (*Laurocerasus*) is known by several species in the warmer parts of the south, all of which are very attractive and are highly prized by those who possess them. They will thrive in the eastern part of North Carolina and half way or more across the other states south of there that border on the Atlantic or the Gulf, including a fringe of Texas. Some of the species of English laurel are *Laurocerasus Bertini* with very broad dark green foliage; *L. colchica*, with foliage having a dark green upper surface and a gray green beneath; *L. caucasica*, with large broad foliage of a light green; *L. viridis*, with short broad light green leaves. These plants are of vigorous growth in any ordinarily good soil and are of easy culture.

The foliage is shiny and they are well suited for screens ten or twelve feet high.

The laurel of classic countries is still another plant and is also known as Bay Tree (*Laurus nobilis*). This is perfectly hardy over a good portion of the South and makes a handsome small tree. It responds well to pruning, as is shown by the way it is used in formal gardening, where sheared specimens are required. Even in the north, where it is necessary to winter them under glass, large numbers are used for the sake of the summer effect they will produce. They are grown largely in tubs in the north, but in the south this is not necessary, as they can be wintered in the open ground without protection.

Another laurel that is of great value in all parts of the south but the warmest portions and the limestone

regions is the Mountain laurel (*Kalmia latifolia*) a native of many parts of the south and as handsome a plant as any that have been mentioned in this article. The foliage is good size and of a deep glossy green, not as large nor as dark as many of the plants described. In late spring or two or three weeks after the oaks come into leaf the bushes are covered with little cluster cups, pink outside and white inside. The plants will grow well in dense shade, but bloom best where they receive an abundance of sunlight.

The photinia (*Photinia serulata*) is a dense shrub or small tree with large leaves of unusual texture or surface, which give it a sort of velvety appearance with a mix-



AUCUBA JAPONICA, OR JAPANESE LAUREL

There is also a variegated form of this lovely shrub, known by its striking yellow markings. A fine plant for the home grounds bearing showy, scarlet berries.



ture of sage green and suggestion of brown with reddish tinge to the midrib and larger veins, the whole foliage becoming more markedly red late in the season. It bears small white flowers in large corymbs in early spring.

Another unusual and attractive plant is the strawberry tree (*Arbutus unedo*). It attains a height of fifteen feet, has glossy, dark green foliage and bears white bell-shaped flowers in abundance that are followed by red fruits that hang on until late the following winter.



THE BEAUTIFUL JAPAN OLEASTER

With their lovely silvery undersized leaves the oleasters give decided variety from the invariable dark shades of the evergreens.

Throughout the north the Virburnums are among the most useful of deciduous shrubs, including several native species of great attraction as well as the common snowball, a double form of a European species. In addition there are two Japanese varieties that are deservedly popular. But for the South there are three evergreen species that are even more attractive than their deciduous relatives. Probably the best is the laurustinus (*Viburnum tinus*), which attains a height of ten feet with medium-sized, glossy leaves. The red buds begin to appear in November and keep getting larger and redder through the winter, opening about February into creamy white, fragrant flowers that remain open a long time. Two other

good species are *V. suspensum* and *V. odoratis simum*.

Another valuable genus of plants for planting with those already mentioned are the Japan oleasters because the foliage gives variety from the dark greens so much mentioned. Simon's oleaster (*Elaeagnus simoni*), is silvery on the under side and when the leaves are moved in the wind it makes a very attractive contrast to the dark tone of many of the evergreens. *Elaeagnus pungens* has this same characteristic, as does also *Elaeagnus macrophylla* which has large leaves with wavy edges. Two small leaved varieties without so characteristic an under color are *E. microphylla* and *E. buxifolia*.

The Japanese Pittosporum (*Pittosporum tobira*), is a representative of a large group of plants used effectively in California. It succeeds well in the South and is well worthy of culture as it can be used as a hedge or wherever severe pruning might be required, as well as for a specimen in the open.

The Japanese Nandina (*Nandina domestica*) is another



CREeping EUONYMOUS USED AS A GROUND COVER

This is the dwarf form of the plant which is often used in foreground planting or for low borders or hedges.

er plant that will relieve the severity of too much dark green. It has several reed-like stems from the same root, the young leaves being tinged with red while the winter foliage is bronze. The flowers are white followed by bright red berries that hang on all winter.



# BADGERS AND WOLVERENES

By R. W. Shufeldt

(PHOTOGRAPHS BY THE AUTHOR AND OTHERS.)

IN the North American fauna we have the American badger, the California badger, the Mexican badger and the Santa Anita badger. Essentially, they present the same anatomical structure, while their differences are chiefly to be found in their sizes and in the color-variations of their pelts. Our American badger is the type of the group.

Badgers are, for the most part, clumsy animals, with stout and squat forms, as though they had been flattened out from above, downwards; and this flattening includes both head and tail, the latter being rather stout and broad. The fur is fairly soft, with a general diffuse color-

present article, we may select the photograph of an unusually large male American badger, which the writer collected at Fort Wingate, New Mexico, on the fourteenth of August, 1887. This animal was thirty-two inches in length, and presented the markings of a typical American badger, although it was shot well within the range of the Mexican form.

Badgers live in burrows which they dig themselves; and in some parts of the West the writer has seen these burrows very numerous in small areas. Although they were all the work of badgers, many of them had been dug to secure gophers, prairie marmots, mice, and other



THE BADGER OF SOUTHWESTERN UNITED STATES

This specimen was collected by the writer in New Mexico many years ago, and the photograph shows very well all the characters of the animal. Note that the black patch is *in front* of the ear and not behind it.

ation, distinct markings occurring, as a rule, only about the head. Being inveterate diggers by habit, they have stout legs, with feet armed with immense claws, especially the forefeet.

It has been the writer's good fortune to study badgers in various parts of the United States, from the Yellowstone River to New Mexico and Arizona. He has had them alive for a long time; shot, dissected and described them, and studied them in nature and in zoological gardens. Large series of skins have also been studied in museums and in private collections. To illustrate the

rodents, upon which they prey; and these burrows, often covering several acres or more, are a source of constant annoyance and actual danger to travelers on horseback in those regions. The writer remembers riding over the prairie at full speed on one occasion, with a shotgun in his hand, held at the grip; his object was to surprise a flock of geese that had come down in a slough behind some cover, and this was a favorite method of hunting them on the prairie. When within one hundred yards of the slough his horse ran one of its forelegs deep down into a badger burrow, the shock





AN OLD BADGER OUT OF HIS BURROW

This figure gives a very excellent representation of the animal as it walks. Observe that the feet are semi-plantigrade, or very like those of a bear. (From A. C. Gould's "Where to Hunt American Game.")

threw the writer clear over the horse's head; and, as he landed, his gun struck the ground on the end of the muzzle, completely shattering the stock at the grip. However, the horse was on its feet again in an instant, luckily unhurt, as the soil was very soft and had given way before its stiffened limb.

It is said that where the food supply is unusually abundant, and other conditions are good, badgers will come together in large numbers, but personally the writer has never seen anything of this kind, and it has been his experience to have met with not more than eight or ten families living in one community, covering a limited area. Scores of burrows were present, but the majority of them were far too small to be occupied by badgers.

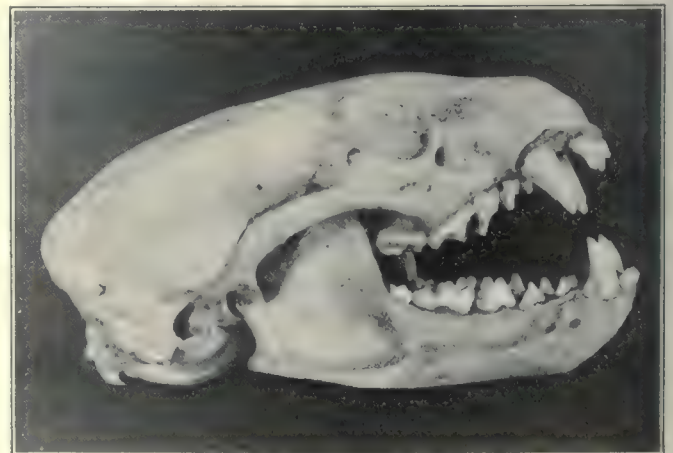
These creatures are shy and timid by nature; still, when the even tenor of their way is interfered with, they can be extremely ugly animals to handle and overcome. None of the *Canidae* found in this region especially care about engaging one in an encounter, as it is quite likely that the badger would come out victorious. His jaws have a tremendous grip and power; and as for any other animal attacking one in its burrow, no such case is known in so far as the writer is aware. In fact, its principal enemy is man, who destroys it by the thousands for the sake of its pretty pelt; and the hair of the badger has long been used for the blenders of artists, for shaving and for other soft brushes.

But on the other hand, badgers are, in a way, useful to man, as they destroy untold numbers of destructive rodents; and the insects, snails and snakes that they occasionally prey upon may or may not be man's best

friends from an economic standpoint. In unsettled parts of the West the badger is ever on the increase; but he is being gradually exterminated as the country settles up, although the chances are that he will hold his own for an indefinite length of time in many localities. When his usual bill of fare runs a little short he finds no trouble in subsisting upon small birds, if he can manage to capture them on their nests; or, he will eat their eggs. He will also eat some kinds of fruits and roots if need be.

Badgers are rarely seen out of their burrows in the daytime, and this is the reason that, traveling over the western plains, one so seldom sees a badger, although their burrows are very numerous and every indication exists of the presence of these animals. They chiefly come forth at night; and it is the rarest thing in the world to find a pair together on this occasion—day or night. For some reason or other, the sexes pursue their avocations usually apart. In sections where they are plenty, we may occasionally catch an old fellow away from his stronghold, when he will be seen to literally flatten himself out like a big, soft-shelled turtle. In this shape he will squat down and look like a little mound of grayish earth, and the horseman has passed him for such many a time. If not too far away to make a run for it, he will try to creep cautiously back to his den unobserved, but this attempt sometimes costs him his life.

Many years ago, when hunting in Wyoming, the writer once surprised a large badger in this way, but did not sight him until he was within about twenty feet of his burrow. The piece carried on this occasion was a double-barrelled shotgun, loaded with buckshot. The shot fired at him apparently wounded him in several places, for he made the dust and stones fly as he rolled over and over in his rage. However, he suddenly pulled himself together and actually got into his burrow before a second shot could be given him, or before he could be headed off. Sometimes when one runs into his burrow, he may suddenly appear again in a moment or two at its entrance to inspect the intruder; and the writer has seen



THE SKULL OF AN OLD MALE BADGER

The badger's skull is built along the line of great strength, and it has a wonderful set of teeth. Note the small, shallow orbit and the peculiar articulation of the lower jaw. Not only can the animal give a fearful bite, but it can hold on to its victim with great tenacity. (Considerably reduced.)



Indians take advantage of this habit by running up to the burrow and deliberately kill the animal with a pistol shot as he showed his head. In those days Indians used also to frequently capture them by running upon them on horseback, dismounting as near as possible, completing the chase, and catching them on foot.

The captive badger which the writer had at Fort Wingate, New Mexico, was an old one, and soon became quite tame; when in good humor he allowed one to stroke and handle him. He was fed principally upon raw meat, but he ate nearly everything that was offered him; moreover, he was very fond of water, and he drank a good deal of it. He has seen Indians eat badgers, but they will also eat skunks and the uncooked intestines of wapiti and buffalo—or rather they did, when buffalo were plenty. Having often skinned both old and young badgers, the odor that came from them was quite enough to deter the writer from ever entertaining the idea of dining upon them, however served. This odor is rank and foul to the very limit of one's imagination.

In regions where they have severe winters, badgers probably remain during the cold spell in a more or less dormant state within the stronghold of their deep burrows; but they are quite fat, however, when they appear in the spring. At this time it is an easy matter to drown them out of their dens, as the ground is frozen and hard, and the water runs straight to the bottom of their burrows; the poor, surprised creatures must come to the sur-

face—so it is death to them either way. There is more of an excuse for this interesting animal to hibernate than for his remote relative, the bear; for what could a badger find to eat after the winter had set in? Surely, no grasshoppers or other insects, and no snakes. Then, too, the ground is as hard as flint rock, and it would take him more than a day to dig out any of his rodent neighbors, even were he able to do it at all. Good, sound hibernation is his only salvation.

Badgers are sometimes caught in steel and other traps; but it takes a very expert trapper to accomplish this, and even such will fail nine times out of ten.

Beyond the mere fact that the American badger mates in the spring, little or nothing is known about the reproduction of this species or its congeners. The reader may have seen very young ones in zoological gardens. So far as one can judge, there seem to be three or four to the litter, and they make their appearance occasionally during the daytime.

A red badger was once seen by the writer; but he was wet, and had been digging in red clay; and no doubt albino badgers have existed—perhaps, too, cases of melanism have occurred among them, as all mammals are subject to these peculiar states, though no examples may ever have been seen by man.

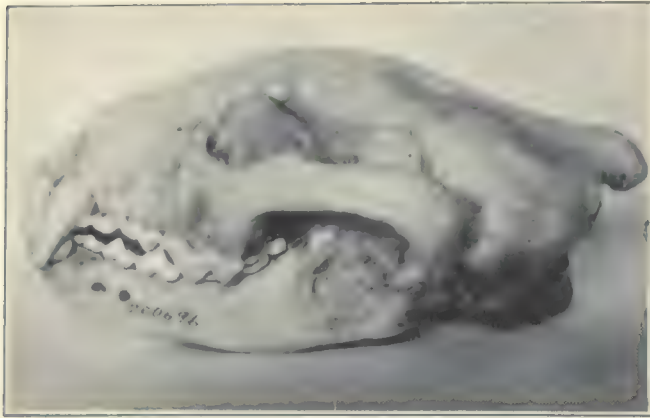
The author of "Fur-bearing Animals" has aptly called the badger a "timid" animal. And "so it is, in the sense that it avoids rather than confronts impending danger;



AN OLD BADGER WITH A FAMILY OF THREE

The writer obtained the photograph of this group in the Mammal Hall of the United States National Museum. It was mounted by the late Mr. William Palmer, and through the courtesy of the Museum's authorities it illustrates the story of the badger's home life as here told. Note the Striped Prairie Squirrel the old one has in its mouth.





THE SKULL OF AN OLD MALE WOLVERENE

In proportion to its size, the wolverene possesses a more formidable set of teeth than a grizzly bear; in fact, the entire skull of this animal is a structure of the most massive character, to a greater degree than in any other mammal of its size in America. (Reduced one half.)

but this is simply the instinctive prudence and discretion of a creature which prefers the absolute immunity of its subterranean resorts to the chances of unequal combat in which it is at disadvantage. Certainly no lack of courage, determination and physical endurance is seen when the creature, captured or cut off from its retreat, is brought to bay. Its pluck is then as conspicuous as its really formidable strength. The cruel sport of 'badger-baiting' is sometimes indulged in in the West; and if the animal be given a barrel or similar retreat in which it is secure from attack in the rear, it may prove more than a match for a strong dog. Indeed, the fighting qualities of the badger, and the stubborn resistance it offers at whatever unfair odds, have supplied our language with a word of peculiar significance: to 'badger' is to beset on all sides and harass and worry. The stout, thick-set and depressed shape of the animal is greatly in its favor, combining with the long, loose hair to prevent a dog from reaching vulnerable parts, and to embarrass it in attempting to take hold; the snap of the jaws inflicts a serious wound; and, finally, the tenacity of life is at a high rate."

The range of the American badger extends from north latitude 58 degrees southward to Oklahoma, and westward to the Rocky Mountains; and formerly it was found as far East as the state of Ohio.

There appear to be three species of wolverenes in the North American fauna, and they occur in various areas in Alaska, British America, and the United States. There is also an European species whose form and habits are almost identical with our species; it occurs, too, in northern Asia, and some zoologists consider this Old World form the same as the common American one. The habits of the various species are pretty much the same everywhere, while the form to be referred to here is the one occurring in the United States.

This big, bear-like animal is also known as the Glutton and as the Carcajou. Its hair is long and shaggy, and the creature walks on the soles of its feet. Its general color is a blackish brown, described by some as a deep purplish brown; this is generally lighter on the top and

sides of the head, while a chestnut brown band, commencing at the shoulders, passes backwards along the sides to meet on the rump at the base of the tail. The feet, legs and under parts are blackish; the claws are dirty white, curved, strong and sharp, the longest one fully an inch in length. The front and sides of the head are marked by a hoary area, and this varies in extent in different specimens. In fact, the pelage of this animal varies according to age and season.

Owing to its size, three to four feet in length, to its thick-set form, short stout legs, low ears, bear-like feet, and to its markings, the wolverene has sometimes been called "skunk bear." Although the animal possesses great strength, it is, withal, a clumsy brute. As it usually carries its head and tail low, the back is given an arched appearance from the neck to the root of the tail, which latter is bushy and of some length. Its remarkably small eyes are wide apart, and its muzzle is short and pointed, while the general form of the head is very round. The ears are low, resembling those of the Pekan, and its strong jaws resemble those of some of the short-muzzled *Canidae*. A few straggling whiskers are found about the mouth, with a few more upon either side of the face. We find between the fore limbs and on the throat several spots, as in the Marten; and in some specimens these spots run together into one light-colored area. The palms and the soles of the feet are thickly furred; but the pads at the base of the toes are naked, as is also a bigger one beneath the carpus.

This sullen and greedy animal has had bestowed upon it an unusual number of names, both common and technical ones. A writer says "probably no youth's early conceptions of the Glutton were uncolored with romance; the general picture impressed upon the susceptible mind of that period being that of a ravenous monster of insatiable voracity, matchless strength, and supernatural cunning—a terror of all other beasts, the blood-thirsty master of the forest. We cannot wonder at the quality of the stream when we turn to the fountain-head of such



A MUSEUM SPECIMEN OF THE WOLVERENE

This fine wolverene is to be seen in one of the exhibition cases in the Mammal Hall of the United States National Museum. It was photographed by the author and appears here for the first time.



gross exaggeration. We find it gravely stated that this brute will feast upon the carcass of some large animal until its belly is swollen as tight as a drum, and then get rid of its burden by squeezing itself between two trees, in order that it may return to glut itself anew—an alleged climax of gluttony to which no four-footed beast attains. We read how the Glutton, too clumsy and tardy of foot to overtake large animals, betakes itself to the

lichens to attract its prey, and to employ the friendly services of Foxes to drive the quarry beneath the fatal spot. I allude to these things, not that such gross exaggerations longer require refutation, but because they are a part, and no inconsiderable one, of the history of the species; and because, as we shall see in the sequel, a perfectly temperate and truthful narration of the creature's actual habits sufficiently attests the possession of



TWO VIEWS OF THE WOLVERENE IN THE AMERICAN MUSEUM OF NATURAL HISTORY, NEW YORK CITY

These excellent representations are of the same mounted animal, giving the characters with great fidelity. The prints were made especially for American Forestry, and presented by the Director of the Museum.

trees beneath which they may pass, and there crouches in wait for its victim; it drops like a shot upon the unsuspecting Elk, Moose, Reindeer, and, fastening with claws and teeth, sucks the blood and destroys them as they run. That nothing may be left undone to ensure success, the animal has the wit to throw down moss or

really remarkable qualities, which may need be but caricatured for transformation into just such fables. We may remember, also, that the history of the wolverene is mixed in some cases with that of other animals, some of whose habits have been attributed to it."

Buffon, who was very much given to exaggerated ac-



counts of animals at times, could, upon other occasions and with equal facility, tell the truth. He once had opportunity to observe a captive wolverene, and his account of it is as follows: "He was so tame that he discovered no ferocity, and did not injure any person. His voracity has been as much exaggerated as his ferocity; he ate, indeed, a great deal, but when deprived of food he was not importunate. He is rather wild; avoids water, and moves with a kind of a leap. After eating he covers himself in the cage with straw; in drinking he laps like a dog. If indulged, he would devour more than four pounds of flesh in a day; he swallows his food voraciously, and almost without chewing." This was undoubtedly an Old World specimen and one, too, with an unusually good temper, which is by no means always the case.

John Watts de Peyster, of New York, writing to W. P. Dando, of London, says: "You would be astonished at the labour and expense I have lavished in gathering and reproducing information respecting these animals. I am astonished at the ferocity of your specimen, because I have read in several works that the carcajou becomes gentle and responsive to kindness, even affectionate, and learns to moderate his gluttonous appetite in captivity. Through the kindness and courtesy of different officials of the principal museums of the world, I have obtained photographs of the wolverene, or carcajou, or glutton, taken from stuffed specimens; but the photographs you kindly sent me are unique, as your institution contains the only living specimen of which I have been able to learn, in any institution in America or on the continent of Europe."

Dando says, in regard to the cage in which this animal was kept at the "Zoo," that its depth from back to front was so shallow that "unless the animal is right against the farthest wall a good photograph is impossible. I was two days getting the results shown, as the animal got into a most violent rage, foaming at the mouth at the sight of the camera, and continued his violent movements and antics for hours together every time I approached the cage, until, overcome by exhaustion, he flung himself down for a second in the position shown, rewarding me for my patience with two representative poses."

By far the best account I have been able to find of

the habits of the wolverene is by Sir John Richardson, who says: "The wolverene is a carnivorous animal, which feeds principally upon the carcasses of beasts that have been killed by accident. It has great strength and annoys the natives by destroying their hoards of provisions and demolishing their marten traps. It is so suspicious that it will rarely enter a trap itself, but, beginning behind, scatters the logs of which it is built, and then carries off the bait. It feeds also on meadow mice, marmots and other rodents, and occasionally on other disabled quadrupeds of a larger size. I have seen one chasing an American hare, which was at the same time harassed by a snowy owl. It resembles the bear in its gait and is much abroad in the winter, and the track of its journey in a single night may be traced for miles."

"The wolverenes are extremely mischievous," says another writer, "and do more damage to the fur trade

than all the other rapacious animals conjointly. They will follow the marten-hunter's path round a line of traps extending forty, fifty, or sixty miles, and render the whole unserviceable, merely to come at the baits, which are generally the head of a part-ridge or a bit of dried venison. They are not fond of the martens themselves, but never fail of tearing them to pieces, or of burying them in the snow by the side of the path, at a considerable distance from the trap. So pertinacious, indeed, are these animals in quest of slaughtered carcasses that they have been known to gnaw through a thick log of wood, and to dig a hole several feet in frozen ground in order to gain access to the body of



CAPTIVE WOLVERENE POSING FOR HIS PICTURE

The photograph from which this cut was made was taken by Mr. Elwin R. Sanborn, the official photographer of the New York Zoological Society, who has made so many wonderful animal photographs in the Bronx Zoological Park, New York City.

a deer concealed by hunters. Another very curious propensity of the glutton is its habit of stealing and carrying away to some distance articles which can be of no possible use to it, and an instance is recorded where these animals removed and concealed the whole paraphernalia of an unoccupied hunter's lodge, including such articles as guns, axes, knives, cooking vessels and blankets."

Experienced hunters and trappers in the West claim that a big wolverene may weigh as much as sixty pounds, but that fifty pounds is the more usual weight. They are very tenacious of life, and instances are on record where the animal has been shot through and through the chest, and not succumbed to the wound. In such cases, of course, the heart is not penetrated, and none of the large vessels divided. They nearly always travel about and



feed by night, there being from two to several individuals in the party. They have been known to be caught in a steel trap, the latter fastened to a big log, the animal dragging this for half a mile or more before being overtaken and shot.

In a good article on the Glutton is presented, dialogue fashion, the following experience of two American trappers in the forest about Chelan, Washington; I quote a part of it: "And now commenced the last act in the play, the final wind-up of the most curious and exciting, if unlucky, day's hunt that I have ever enjoyed; this was to find out the whereabouts of the trap and the animal that had made such a wreck of our carefully built pen, and we were soon back on the trap-line and commencing an examination of the scene. 'There's been a regular circus here,' observed Andy, as he looked over the dirty, plowed-up snow before us. 'However, there's one in the trap yet, and there's the direction he has gone; should you see him first, fire instantly, for the trap is only a single spring No. 1½, and he will do his best at pulling when he sees us. Look at what he's done here.'

"A clump of willows stood near, and the heavy drag-pole attached to the trap had evidently caught fast in them. But that did not seem to matter, for they were now mostly lying on the snow, mown down by the brute's teeth. The trail of the log was clearly marked, and led down a small ravine, which ran to the bottom of the canyon below, and for nearly a hundred yards we followed it. At last I saw another bunch of willows shaking violently, and there, held fast by the toes, in our steel trap, was a big wolverene, struggling desperately to detach the pole from the bush in which it had become entangled; but on our approach it stopped a moment, showed its teeth, and then recommenced its attack on the willows. For a little while I was unable to get a chance to fire, owing to its rapid movements, but one soon came, and a 255-grain hardened ball entered its head near the ear, passing out at its lower jaw, and the wolverene fell dead without so much as a single kick. I dragged the body up the hill again—no easy task, for it was four feet three inches in length, weighed all of fifty pounds, and the climbing was steep. Andy followed with the trap and pole; and, while I was engaged in taking off the thick, dark skin, he went on to see the next trap, which was half a mile distant, where he found a marten for his trouble. The wolverene's body shared the same fate as the Fisher's had earlier in the day; the pen was rebuilt, and the trap carefully set." It may be added that these men used the flayed body of the wolverene to bait the trap; and they claim that a skinned Fisher is the very best bait in the world for this purpose. During the next month they took five more of these animals, and that seemed to clear out all that was left of them in that neighborhood.

As an instance of the boldness of a Glutton when pressed by hunger, the following is presented. It happened in the middle of winter at Victoria Harbor, where the animal came over the snow wall surrounding a vessel. Notwithstanding there was over a dozen of the crew on deck, the wolverene made for a cannister of meat that

had been opened and partly used. The ravenous brute at once commenced to devour this meat; and so eager was he in doing this that one of the men had no difficulty in passing a rope slipper-noose over its head, drawing it tight and strangling it.

In those days the skin of a wolverene was held to be of considerable value in Kamchatka, and the women there used to wear in their hair, by way of ornament, the white claws of this species. It has been claimed by the older describers of this species that the pelt of the Old World specimens showed a finer and glossier coat of black hair than did the ones taken on the American continent, in which the hair more closely resembled the fur of a black bear.

In some regions, the wolverene is known as the Indian Devil, or as the North Shore Devil, and is most heartily hated by the Indian trappers, where Indians still engage in such pursuits. Great is their satisfaction when a specimen is slain or trapped, and no mercy is shown it in the latter instance.

A burrow is selected by the carcajou as its home, and here the female brings forth some half a dozen young in midsummer time. These little fellows are not so very unattractive, being lighter colored than the mother, who will, in times of danger, fight for them like a tiger; indeed, her fearlessness on such occasions is something truly remarkable. During the warmer months of the year the wolverene feeds largely upon the smaller rodents, upon certain reptiles and many insects. He is also said to kill and devour young fox cubs, running them into the parental den to capture them, the tragedy usually taking place in the innermost recesses. This insatiable prowler will also feed upon birds' eggs or on the young—indeed, he will feed on the young of anything that he can get his paws upon. It is said that if a wolverene, in the winter time, captures an animal larger than he can consume at one meal, he will bury the remainder in the snow, and then take the precaution to scent it over so thoroughly with the perfume of his own that he keeps ever on hand, that no other creature will eat it, even if on the very verge of starvation.

The wolverene does not hibernate during the winter months, and in this it agrees with other representatives of the family to which it belongs. It does not climb trees, although there are many stories afloat that this animal is a tree climber.

Nothing new seems to have been added to the life history of this remarkable animal during late years. It is, and always will be, dreaded by its enemies throughout the forests it inhabits, and by the smaller mammals it preys upon. Among our own kind it is heartily hated by any man with whose interests it interferes, and this refers especially to those who hunt and trap the fur-bearing mammals for their pelts. It has always been man's nature to hate and destroy any of the creatures below him that in any way interfere with his means of making money. He only pets and cares for those which are useful to him and contribute to his comfort, and he does not hesitate to deprive of life millions of those he subse-



quently devours. Doubtless the wolverene believes he has quite as much right to kill and eat a young fox when he comes across it, as a man has to murder a calf or a lamb in the very presence of their distracted mothers, when it strikes his fancy to want them for food. It is a very excellent example of the old saying that it is a "distinction without a difference."

The stories of the wolverene given us by Doctor Coues go to show, upon pretty good authority, that the eyesight of this animal is poor. When one of them meets with a man in the woods, it has been seen to rear up on its hind legs and to shade its eyes with one of its forepaws, much as we ourselves would do to cut off the sun's rays to get a clearer view of the person we had fallen in with. Sev-

eral of his stories illustrate the wonderful reasoning powers of the wolverene in avoiding being killed or caught by the different kinds of traps man sets. It has also been known to chew in two the string in gun-traps leading from bait to the trigger, and this not only in the case of the same trap, but two or three times, leading the hunter to believe that "*that* carcajou ought to live, as he must be something at least human, if not worse."

And so they go—good stories and bad; by which is meant fables about the poor, despised creature, which every other living thing knows but to abhor and hate. Still, perhaps wolverenes have, in a way, a pretty good time among themselves, when their arch enemy does not interfere with their affairs.

## A LAUDABLE TREE PLANTING



THE PLANTERS OF THE ROCK ISLAND "HONOR ROW"

Underwood and Underwood.

To the Rock Island Lines goes the honor of establishing the first "Honor Row" of trees planted for employees fifty years or more in the service. This "Honor Row" has been placed along the right of way at Midlothian, Illinois, where the youngest engineer or conductor can see the Lombardy Poplar. The Rock Island Line is taking steps for the planting of memorial trees in honor of their men who were in the service of their country during the World War, but the honor roll for "Old Timers" is a very unique move.

In the picture from left to right are Charles Tinley, of Chicago, in the service since 1856; Sam N. Dickerman, of Chicago, in the service since 1867; Charles H. Davis, of Rock Island, Illinois, in the service since 1857; John F. Lacey, of Chicago, in the service since 1869; Jacob E. Binkley, of Des Moines, Iowa, in the service since 1867; E. B. Cropper, of Minneapolis, Minnesota, in the service since 1865; James Sheahan, of Chicago, in the service since 1866.

These engineers and conductors have all been retired on pension upon concluding their fiftieth year of service. The record of John F. Lacey is unparalleled in railroad history. He has traveled over ninety-five times around the world in his fifty-two years of service without an accident. The trees have been registered in the Hall of Fame by the American Forestry Association.



## TOWN FORESTS - By J. W. TOUMEY

(Continued from page 96.)

older and more densely populated states of the East, the increase in the present area of public forests is likely to be in forests owned by cities and towns. I believe we can look forward to the increasing importance of these forests not only for the protection and recreational purposes that they serve, but also as important sources of local timber.

Those who have made a close study of public forest ownership abroad are convinced that communal ownership of forest property is advantageous and economically practicable. Many of those who have followed the progress of public ownership in this country also believe that communal ownership will in time prove as popular and practical as it has in Europe.

There are three reasons why city and town forests are practical and advantageous, and why it is safe to predict their inevitable rapid increase in the future.

1. City and town owned municipal water supply systems carry with them the necessity for the protection of the drainage areas from which the supply comes. This means that the only practical use to which the drainage area can be put, aside from the production of water, is for the growth of timber. Drainage areas need to be forested. Hence the necessity of city and town forests to protect municipal water supply. Even now throughout the country this is being recognized and cities and towns are buying forest property for this purpose.

2. The conspicuous increase in outlying city and town parks acquired entirely for recreational purposes in all parts of the country emphasizes the importance of adequate recreational areas for public use. These outlying parks which are now being rapidly acquired by towns and cities throughout the country, are in reality city and town forests and eventually will be managed and handled as city forests and not as parks. The idea of wood production will be emphasized as well as the ideas of recreation and protection.

3. The marked decrease in adequate supplies of timber, and the rapid advance in the prices of the better grades, make the growing of timber an economic possibility in many localities near many of our cities and towns, and this will eventually stimulate the acquiring of such land for communal forests.

If a town, by acquiring a forest property, can protect the source of its potable water, can afford space for recreational purposes, and can supply forest products for its citizens, many towns are certain to take advantage of the opportunity while near-by forest land is relatively inexpensive. Before the war, Vienna owned a great forest south of the city, stretching southward to the Austrian Alps. This forest was not only the source of the water supply for a large population, but thousands of people visited it daily for recreational purposes, not only in summer, but in winter as well. Furthermore it returned the city a large annual revenue derived from the sale of forest products.

It is my judgment that public attention should be directed by those who have it in their power to do so, to the desirability of increasing our present area of public forests in this country by literally thousands of communal forests. Towns and cities should be persuaded into purchasing such forests, and wealthy citizens encouraged into acquiring suitable forest properties and giving them as memorials to their home communities. Here is a field for the forestry associations in the several states that is almost untouched. If the forestry association in any state can, through its avenues for publicity, show the public what communal forests mean, and why the present time is auspicious for the increase of such forest ownership in this country, and can carry its influence so far that tangible results are attained, it will perform a public service infinitely beyond anything heretofore undertaken. For one, I believe in city and town forests in America. We should have many of them and widely scattered over the country. Furthermore I believe that they are practical, in the long run economical and advantageous to the community. I believe that a considerable area in communal forests well managed will be better appreciated by the public than an equal area in national forests or state forests.

Germany, before the war had but 1.8 per cent of her forest area in crown or national forests. She had about nine times as much in corporation or communal forests. Switzerland has in national and state forests combined only 4.5 per cent of her forest area, while she has 67 per cent in communal forests. In America the idea of communal forests has not been sold to the public. When it is we are certain to see a very rapid increase in this kind of public forest ownership.

In the development of communal forests it is not enough for individual towns to secure tracts of land either by gift or by purchase and call them town forests. If they do, and if there is no organized machinery for their use and development, very little is accomplished. Furthermore, an individual town owning a small area of forest land can ill afford to employ an efficient forester. This, I take it, has been the chief difficulty in the past in this country and the reason for the lack of efficient management of the limited areas of communal forests that we now have. It is my judgment that communal forestry must be closely linked up with the state forest administration and laws promulgated that will afford a form of co-operation between the community and the state which will insure to each communal forest a reasonably high order of forest management.

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The wonder of the forests, their immensity and variety, their worth—are to be considered as an ineffable appeal to conserve and restore and save. Help to perpetuate—talk forestry to your friends and let AMERICAN FORESTRY MAGAZINE show them the way to a better understanding and appreciation of God's great outdoors. Nominate them for membership!



# AMERICAN FORESTRY GUIDES DEPARTMENT

By SOLAN L. PARKES, CHIEF EXECUTIVE, AMERICAN FORESTRY GUIDES

From all over the country come endorsements of the organization of the American Forestry Guides, and pledges of support are being received from practically every person who has been asked to become an officer or to lend their aid to the movement. This month we publish an article by Prof. Filibert Roth, of the University of Michigan, one of the leading foresters of the country, and also comments by other prominent men on the organization.

## WHY THE FORESTRY GUIDES

By Filibert Roth

**B**AD management has brought down the timberline here in the Alps by many miles," said the rugged old forester of Switzerland.

Modern civilization has followed this process in the human family, but instead of doing harm, is doing good.

The "Service line" has been lowered on the mountain of age; the boys and girls are sharing in the work of our people; the child's toys are laid aside for the implements of men and women; the young folks get fun out of doing men's work and women's work; they take pride in the doing; they show a superior sense of responsibility; and they actually do gain, and not lose in loveliness by this change.

The intelligent, responsible boy, and girl, rendered more courageous and enterprising by belonging to a good Voluntary Service Organization such as the American Forestry Guides, is more interesting and enjoyable to his mates and to his parents, than is the dawdling youth without ideas, plans or ambitions.

The modern world moves on large lines, calls for help from many forces not formerly used, or even understood or appreciated.

The forest is off by itself; it was far more remote in the past; the average man did not visit it and certainly did not understand it, let alone love it and the man of fifty years ago does not understand it now—

Modern education tells of Nature and the fruits of this education are beginning to appear; the young people stream to the woods, they learn of the tree and shrub, of the habitants of the forest from squirrel and hawk to fish and insect, they learn to love the woods, they learn to appreciate them as camping place and play ground, they enjoy their endless beauty, the endless source of fun.

As a consequence they resent the devastation of our forests by the greedy and ignorant, the denudation of lands which are left as unused wastes, and especially resent vandalism and the useless destruction of forests by fire.

The older generation, the men of half a century ago, did not and do not now appreciate the forest, to them it is an encumbrance, they wish to see the country "developed", the land cleared.

That this should have a proper limit did not seem to occur to them.

The warnings of Sargent in 1880 fell upon deaf ears, the greedy and interested ones were not slow to turn the old beliefs to their account in 1908 when Roosevelt and

Pinchot called the Nation's attention to our forest needs, the most powerful man in Congress was "glad that they had no forests in his good state." But this old belief and conviction has done great harm to our country and now promises to do still more.

No wonder that Solan L. Parkes, the good citizen of Reading, Pennsylvania turned away from the old, and calls upon the youth, the boys and girls of this great Nation, knowing them to be open minded and lovers of the forest; he calls to them to rescue what is left of their proper and most wonderful heritage, and to set themselves to the enormous task of rebuilding our forests throughout the length and breadth of the land.

He has tried them out in his own community. He has found them ready, able and willing, hundreds of acres have been planted to trees.

The grownups who would not come to forestry meetings, were glad to help their young people.

In 1916, 770 high school girls were transported to one of the watersheds of Reading, Pennsylvania in fifteen special trolley cars, a temporary hospital was provided; every other precaution was taken for their care and comfort. Attention was attracted to forestry needs by this effort, farmers and owners of waste lands followed the example set by the youth of Reading, until millions of trees have been planted, for the Spring of 1922; a campaign has been launched to plant an additional million. The forest planted in the Spring of 1916 was a marvelous success; it is growing with most of the trees taller than the planters, some now measuring nine feet in height.

The same held true with the forest fire loss, the older ones, the grownups seemed unable to stop forest fires. Mr. Parkes began to organize Volunteer Forest Fire Patrols as early as 1913. In 1914 the acreage burned over in Berks County amounted to 15,000 and in placing the loss at only \$3.00 the acre the County lost \$45,000 in this one year. Organization was so perfected that instead of only organizing to fight forest fires, Mr. Parkes laid greater stress on Forest Fire Prevention and this was so successful that in the Fall of 1921 less than three acres were burned over and practically no loss was occasioned.

Mr. Parkes is convinced, the girls and boys of Reading and Berks County Pennsylvania did without prating and printing, what dozens of associations of grown people did not do, what better proof could any one wish? And literally millions of young people today are waiting



for a chance to do what has so successfully been done in Pennsylvania under the leadership of Mr. Parkes. No better chance, no more worthy object, no finer inspiration, to render service than the restoration of the forests, venerable, useful and enjoyable, the teacher of the finest al-

truism; the forest of our generation and the forest which links the remote past with the distant future. This forest now calls the boys and girls of our Nation to come to its aid and stand for its preservation. Come and join the American Forestry Guide family.

## WHAT PROMINENT PEOPLE SAY OF THE GUIDES

"To my mind the boys and girls who are so situated that they can get out into the woods or mountains have an opportunity for study which cannot be equaled. But for those who do not live where they can be out of doors a great deal, there are books on Nature study which can be read to advantage. \*\*\*\*\* resources now conserved will make for a greater America when the young people of this country have grown to manhood and womanhood." O. H. SHOUP, Governor of Colorado.

"It occurs to me that it was a happy thought more than that—an ingenious project, representing real vision—that our American boys should be enlisted in an effort to preserve to ourselves and posterity our forest wealth. 'We cannot have our cake and eat it too', we must cease our careless destruction of tree life. I foresee that a tree in the centuries of the future will be nurtured and guarded as we now take pains to preserve certain all but extinct species of animal life and rare fowls."

THOMAS C. McRAE, Governor of Arkansas.

"I am delighted to see there is a movement on foot to create a greater interest among the youth of the nation in the preservation and conservation of our forests, other trees and wild plant life, bird and harmless animal life."

BEN W. OLCOTT, Governor State of Oregon.

"Permit me to express my most thorough and hearty approval of the movement."

EDWIN P. MORROW, Governor State of Kentucky.

"The conservation of our forest trees, plants and bird life is essential to the nation and it will be a pleasure to cooperate and do what I can along these lines."

JOHN M. PARKER, Governor of State of Louisiana.

"I am in sympathy with any organized effort for forest conservation and believe that American Forestry Guides can be made of importance."

J. W. TOUMEY, Yale University.

"I am very glad to have the opportunity to serve with you in any possible way in this excellent work."

GORDON PARKER, Colorado College.

"I am very glad indeed for the privilege of working with you on the work you have in hand." (The conservation of the forests.)

F. G. MILLER, University of Idaho.

"Pleased and honored to be identified with the American Forestry Guides."

THOMAS B. WYMAN, Wyman's School of the Woods.

"Glad to assist in any way I can."

HUGO WINKENWERDER, University of Washington.

"I consider this new and important field of work very vital to the whole plan of furthering forest conservation."

R. P. McLAUGHLIN, Montana State Forester.

"I will be very glad to be of what assistance I can in the efforts to educate the younger generation of today to the present needs of forest conservation."

THOMAS D. BURLEIGH, University of Georgia.

"Perhaps our greatest need just at the present time is to arouse public interest in fire protection and to secure the cooperation of everyone going into the woods to prevent fires from starting. If your organization can be of assistance in this direction, both through general publicity and through the personal education of individuals of all ages, it will be performing a real service."

S. T. DANA, Forest Commissioner of Maine.

## QUESTION BOX

J. D., Wis.—Certainly you can become a member of the American Forestry Guides, you can keep your membership in the organization you mention.

We will explain further: The American Forestry Guides plan was especially originated to give to the boys and girls, to the young men and to young women a forestry program, whereby all could understand that all plant and animal life was placed here for a purpose and that by its wanton destruction we are showing not only great ignorance but also a great disregard for the benefits derived from our resources.

So no matter what other organization you belong to you can be an American Forestry Guide.

You also say that you "want to get all out of life that you can." Do so, but do not forget that you must also make your life count, for you also like the trees were placed here for a purpose and that purpose was not alone to see what you can get out of life, but also to make your life useful to others and to your country.

R. H., Colo.—You can select the name of any great American for the name of your Post.

R. O., Ind.—Write to your State Forester, he will help you.

S. T. N., Mexico.—Write to Wm. B. Greeley, Chief of the U. S. Forest Service for Hand Book for Campers in the National Forests of California. On pages 34 and 35 you will find illustrated the method used to tie your equipment on your pack horse, read article on First Aid on page 37 also. This pamphlet is all sufficient for any one that will travel on horseback.

N. K., Minn.—Pennsylvania was the first state to establish a Forestry Department, as a regular branch of the State government. J. T. Rothrock was the first Forestry Commissioner. At the present time Gifford Pinchot fills the position.

O. M., Wis.—Tennessee is the first State to pass a law making the study of forestry compulsory. Write to the State Forester at Nashville, Tennessee, if you care to have a copy.

Miss J. V., Colo.—You ask if there are opportunities for a girl in the forestry field. This we answer in this manner. Louisiana has employed a lady forester who is devoting all her time to the work. This is the first one so employed that we have knowledge of, and is a wonderful step forward in the right direction for while man has spent his life to cut down trees, this lady forester spends her life teaching the youth of her state how to plant forests; that there is value in plant life and should not be destroyed; that while the birds add life and beauty to our natural scenery and fill the air with song that they also are one of the greatest friends of men, by feeding and living on the insects that would destroy our crops. Write to her for advice.

Address your letter, Miss C. C. Dormon, Department of Conservation, New Orleans, Louisiana, Care V. H. Sonderegger, Superintendent.

H. T., Penna.—You will find the Bird House survey by Ned Dearborn, a safe guide. While it is true that wrens do build in houses that have entrances of larger diameter, you will find that other birds cannot enter the wren houses. The wren does not like to be disturbed and is likely to seek another home if molested too often, hence the smaller entrance is the more advisable.

H. T., Miss.—Yes, you can organize your Post in two divisions, one where the ages run from 9 to 14 years and the other from 14 to 20. Your idea of having the Post of the younger boys meet after school is excellent.

Space will not permit us to answer all your letters. This will be taken care of later on.



# CANADIAN DEPARTMENT

## By ELLWOOD WILSON

During the summer the Premier of Ontario planned to appoint a forester as Deputy Minister of Lands and Forests, and to bring the management of the Province's timber lands to an up-to-date and efficient basis. He planned to improve fire protection, to establish county forests, and many other improvements. The appointment of Mr. Cain, Secretary to the present Minister, has just been announced. It is sincerely hoped that this appointment will not mean that the old policy will be retained. The new Deputy Minister has an enormous opportunity if he will but have the courage to forget politics and try and administer the forests for the good of the people. All strength to his arm.

The two peripatetic cars of the Canadian Forestry Association have been combined and are now touring the Eastern Provinces. From November 14 to 19, nearly 3,500 people visited these cars to see the exhibits and to hear the lectures in French and English. A great many school children came and it is safe to say went away knowing a great deal more about the forests. The basic demand for forestry progress is popular education along popular lines, and the travelling cars are doing a splendid work.

A Johnson gasoline fire pump was last spring sent over to Scotland for use on a large estate on which a serious forest fire had occurred the previous year. This season was an exceptionally dry one, and the pump helped very materially in extinguishing two fires.

The inaugural meeting of the Empire Forestry Association was held in the Council Chamber of the Guildhall in London on the sixteenth of November. The Lord Mayor presided. This association has been granted a Royal Charter, and has for its patron the King, and for its first president the Prince of Wales. The object of the association is to spread information as to forestry, to bring about closer relations and co-operation between the forestry agencies throughout the empire and try and encourage the interchange of timber products among the Dominions and Colonies. It will endeavor to educate public opinion to demand the adoption of rational forest policies and will try to serve as a link between associations and individuals who are interested in forestry. It will also collect and publish facts as to existing forest conditions throughout the empire and its future timber requirements. It will publish a quarterly magazine.

Mr. Helge Sylven, writing from Sweden, voices the need for an international society of forest engineers. An attempt was made

to do this about 1912, but only two members were obtained, one in Spain and one in Canada. Dr. Unwin has tried to get a Society for British Foresters started also. It would seem, however, that an international society would be better. Foresters' problems are the same the world over and great good would come from a closer relationship and exchange of ideas. The present close relations between Swedish and Canadian, and between Indian and United States foresters have certainly shown how useful some such society could be.

Forestry in Australia has met a very bad blow by the resignation of Mr. C. E. Lane-Poole. Large vested interests asked for large timber cutting rights which were decidedly contrary to good forest policy. In order to prevent this from going through until the matter could be discussed openly in Parliament, Mr. Lane-Poole asked to be released. Another instance of the forester sacrificing himself for the good of his country. Mr. Lane-Poole will make a report on the forests of Papua.

The past season has been the worst ever experienced in the St. Maurice Valley. For seven weeks in the spring no rain fell, and in the western section July and September were also very dry. Many men were out of work, so that the woods were full of hunters and fishermen, and as many of the farmers who usually work on the drives and in the woods could get nothing to do, they turned their attention to clearing more land on their farms, so that the number of settlers' fires was larger than for many years. The cost of extinguishing fires reached a figure never before heard of, \$114,180 having been spent as against \$13,004 spent in 1914. The number of fires along railway lines was much reduced, owing to the awakening of railway officials to the seriousness of destroying timberlands by fires, and their much-increased interest in seeing that they set as few fires as possible. From managers to sectionmen they did their best and have demonstrated that railway fires can be controlled. Railway fires were reduced from 149 for 1920, to 52 for 1921. In all 216 fires were reported, 82 less than the previous season, and of these 79 required extra labour. The total loss this year is greater than the total of the nine previous years, 193,791 acres were burnt over, 17 per cent of which was merchantable timber. There is a strong presumption that some fires were set to obtain work and some were kept burning for the same purpose. Nineteen prosecutions were brought against men who refused to fight fires and six against settlers for setting fire to their clearings without permits. Settlers caused more fire than they did in the last

five years. Most of the large fires were caused by hunters and fishermen in inaccessible places. Seven fires burned over an area of more than 10,000 acres each, and five between 5,000 and 10,000 acres. One fire was so severe that one of the mills closed down and all the available men went to fight the fire. On some fires men were kept busy for over two months. A vigorous campaign of education was carried on during the last year, a man with a moving picture machine visited villages and drivers camps, and much interest was excited. The only hope is in educating the people who use the woods to be careful. It seems that the only way to enforce carefulness on those travelling in the woods will be to require all who go into the woods to obtain a permit from the district ranger, simply to keep track of them. If men know that their presence in the woods is recorded, it will make them much more careful.

The lesson of the season is that when bad dry summers occur in country which must be traversed almost entirely by canoe, and where there are no means of quickly reporting fires, the system of ground patrol breaks down entirely. Rangers travelling along the water routes cannot see smoke behind the hills until the fire is beyond their control and then it takes so long to travel to a telephone and get back with help that the fire has become a conflagration. During the last season a number of fires were picked out and reported by seaplanes on other duty, which had not been seen at all by the rangers and which had been burning for some time. In a country so covered with lakes and rivers as the St. Maurice Valley, a daily aeroplane patrol would be better than even an intensive ground patrol and the crew of the plane could easily land and extinguish fires long before they had time to assume any size at all. This method may be given a thorough tryout next season.

A new flying boat has just been constructed which can climb easily to 19,000 feet, as against 8,000 for previous models, and which can cruise for six hours at speeds from 60 to 130 miles per hour. It has climbed 15,000 feet in 39 minutes. It has a low landing speed and would seem to be an ideal machine for forest patrol and mapping.

It is hoped that before long the Provinces of Canada will announce definite forest policies which will safeguard the forests so that our important wood using industries will be assured of a continual supply of raw material. Two of the Provinces, British Columbia and New Brunswick, have appointed advisory committees of lumber-

(Continued on page 120.)





*Reproduction from a painting in oil by Frank Swift Chase, of the beautiful John B. Stetson estate near Philadelphia.*

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An investment in a home probably may depreciate thousands of dollars if certain priceless trees are later lost. Whether you own the place or consider buying it, the thing of first importance is the trees. Before you buy, make sure what their condition is—how much attention they require; whether any of those needing attention are beyond saving. An examination and report, by tree authorities of absolute reliability, costs very little. Before you plan your home have your trees examined by Davey Tree Surgeons. Do not make the mistake of locating your house—or planning the landscape—with reference to certain trees unless you are sure they can be saved. This very mistake has been made thousands of times.

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# BOY SCOUTS AND THEIR FRIENDS THE TREES

By E. S. Martin

From the beginning Scouting has taken boys from city streets out into the woods and aimed to develop an interest in all out door life. The trees, especially, are a Boy Scout's good friends. He is taught to exercise the greatest care in extinguishing his camp fires so as to run no risk of starting a forest fire and otherwise to refrain from doing anything which might in any way injure forest life. But Scouting goes farther than this. It actively employs its members as conservationists.

All over the country Boy Scouts are being enrolled as aides to Forestry and Park Commissioners in preventing and fighting forest fires, waging war upon the bag worm, the gypsy moth and other tree enemies, helping enlist popular interest in conservation methods and forest protection generally. In the state of Pennsylvania alone it is estimated that thousands of acres of valuable timber land have been saved by the efforts of Scouts.

In Marion, Indiana, Pontiac, Michigan, Jackson, Mississippi, Terra Haute, Indiana, Riverside, California, and many other



THE NIGHTMARE  
The Revenge of the Trees

cities Scouts have made city wide surveys, locating and tabulating species and condition of trees, in co-operation with City Planing Commissions and other agencies.

During the war the Boy Scouts of America located for government use large quantities of standing black walnut timber and promised to do their utmost to see that any depletion of the species was supplied by re-planting. This pledge led to Scouts undertaking an extensive service in the planting of trees of many species, which has been going on ever since. In city after city they have taken the lead or worked with others in planting "memorial trees" in honor of the soldier dead, over 20,000 such trees being planted by them during the past two years.

Every tree is a matter of interest to a Boy Scout, a friend to be studied and revered and protected to the utmost of his power and every Scout believes that.

"He that planteth a tree is a servant of God."

## PLEASANT THINGS TAKEN FROM LETTERS TO THE EDITOR

"Your valued magazine is much appreciated and I hope will be a power for conservation of our forests."

ALFRED W. GIBBS.

"I am sure the bulletins which you sent will be of very great assistance to us in preparing our outline of work to be used in connection with our public schools."

E. N. COLLETTE.

"Usually, especially these days, one cannot send remittances in various directions without letting them go with considerable reluctance, but there is one remittance that I make and that I am glad to make, one in which I take genuine pleasure, and that is for the American Forestry Association, only regretting that I could not make it a hundred times as large and thus do more to help along the work."

D. M. RIORDAN.

"I am a student in the New York State College of Forestry at Syracuse, N. Y., and find many articles in AMERICAN FORESTRY which are of value to me in my studies. I cannot praise too highly the work which your paper and your Association is doing."

JOHN G. CAULKINS.

"Your magazine gets better every issue."

B. H. STONE.

"I am herewith enclosing check to cover dues for my subscription to your magazine for the coming year, and wish to state that I thoroughly enjoy every issue and am glad to cooperate by sending dues promptly."

CARRIE L. ENGAU.

"I wish you success in your work."

JOHN A. DOELLE.

"The magazine is very good and I intend to write you about its merits some time in the near future."

A. E. WATERS.

"The magazine is a delight to peruse and you deserve the thanks of every nature lover for giving us such a publication."

H. B. DECKER.

"I do not know what we would have done without AMERICAN FORESTRY. It has enabled us to emphasize the advantages gained to a country by a proper forestry organization."

V. B. TRAPPE (Australia).

"I would not forfeit my membership for a good deal. With best wishes for the welfare of the Association."

P. D. HANSON.

"I have been taking the AMERICAN FORESTRY magazine for several years and it is very interesting and instructive."

HARRY E. DOBBINS.

"The June issue of AMERICAN FORESTRY is perhaps the most attractive issue of that publication we have ever seen and Supervisor McCain's beautifully illustrated article on 'The Lofty Tetons' is surely one of the best features of the issue."—Daily News Bulletin of the Intermountain District of the Forest Service.

"I see great improvement in the magazine during the last few months over the same magazine a year ago and sincerely hope to see it advance rapidly in the months to come."

E. L. SCOVELL.

"We attach much importance to teaching our boys and girls about forestry, and your magazine is wonderful."

MISS KATHERINE PETTIT.

"I think AMERICAN FORESTRY magazine is improving each issue, and can hardly see how any one interested in forestry or the welfare of the land can do without it."

D. W. BABCOCK.

I have enjoyed reading AMERICAN FORESTRY during the past year and regard it as possessing unusual merits."

J. L. CARTER.



## MINING AND FORESTRY IN ILLINOIS

The interdependence of forestry and many of the industries becomes more apparent day by day. Coal mining companies in southern Illinois are becoming interested in the value of their own timberlands as the prices of mine timbers increase, State Forester R. B. Miller of Urbana reports.

The first step in this direction was made in March, 1909, when a company in Williamson county had the United States Forest Service make an examination and planting plan for their lands, an area of 14,000 acres. Two courses were suggested to them by the service, first gradually to restore the soil to its former state of fertility by up-to-date methods of agriculture or to try out thoroughly, the practicability of forest planting on something like 140 acres.

Within the last year State Forester Miller has made examinations of timberland owned by two large coal companies in southern Illinois and found that in each case the main question was one of fire protection. One of the companies also had an eastern forester go over the same ground and his opinion and recommendations were practically the same. He further stated as

an impartial observer from another state, that intensive forestry had great possibilities in southern Illinois due to the rapid growth of the species, the favorable market and the chance to sell profitably the product from cleanings and thinnings—operations which would also benefit the stand of timber.

This company is taking the advice of the foresters and already has put a patrolman and watchman on their land in Franklin county to look out for fires and also plans a detailed survey and examination of their timber holdings.

"With the present high price of mine timbers," State Forester Miller said, "the logical and economic thing would seem to be for the coal companies to have a nearby supply of timber on their own lands at least to protect it from fire so that they will have a reserve in the future when the supply from farm woodlands is exhausted.

"On account of high freight rates, a man who is in the business of buying mine timber reports that his freight is almost as much as the cost of the timber, so the plea that the mines can get Missouri timber when our own supply is exhausted is based on a fallacy. This extra cost for timber due to high freight rates must be passed on to the consumer, as an increased cost of coal."



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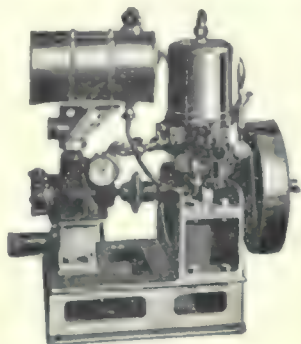
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## CANADIAN DEPARTMENT--Continued

(Continued from page 116.)

men and pulp and paper men, who constitute a minority on the board and have a vote as to the policy of the Government. Ontario and Quebec are going to be asked to appoint similar committees.

Mr. G. C. Piche, Chief Forester of Quebec, has just announced in the "Canada Lumberman" that his Government will "in the near future fix a maximum quantity of cutting to be done per acre." He has explained this to mean that if a licensee has, say, 10,000 acres, he will be allowed to cut each year on the whole tract, say, sixty-five board feet per acre, the approximate average annual increment, or 650,000 board feet per year on the whole tract. This would be somewhat less than three logs per acre. There is no question but that some such restriction is necessary to keep the forests productive, but just how it works out in practice remains to be seen. At present the Government has not enough men on its staff to supervise such work. It could be easily controlled, however, by some penalty on those who cut a greater number of logs over their total holdings than that specified by the regulation. However, this would not prevent over cutting on one section and no cutting on another, which would result in getting everything off the land which the diameter regulations would allow. It will be of great interest to see how the Government will work out this scheme.

During the week of December 19 the organization meeting of the Quebec Society of Forest Engineers was held in the City of Quebec. Legislation has been passed making forest engineers a "closed corporation," that is, no person can practice as a forester in the Province of Quebec unless he is a member of this association. Should a non-member call himself a forest engineer or practice, he is subject to a fine, and in default of payment, to imprisonment. The

fees chargeable to the public are also fixed and foresters can sue for them in the courts. This puts the profession of forestry on an equal footing with that of civil engineers, land surveyors, physicians and lawyers. The association commences its career with a membership of 75. The requirements for associate membership are 21 years of age, must be a British subject and a graduate of the forest school of Laval University, or the Montreal Technical School, or a university of recognized standing in the Province of Quebec. All graduates of other forest schools must appear before the Board of Examiners, and if their credentials are satisfactory they may be permitted to practice. In order to obtain full membership, a man must have been a member of this society for 3 years and have been in active practice. A committee was appointed to draw up a practice for making valuation surveys, for working plans and for requests for the reduction of the diameter limit, to be presented to the Government. This society will undoubtedly do much to bring together the foresters in the Province and to raise the standard of work. A meeting of all the foresters working for private corporations was also held and matters of mutual interest discussed. The men present decided to meet informally at least four times a year, to discuss the problems which confront them as foresters for large pulp and paper companies, and much valuable information was exchanged.

The final report of the Canadian Air Board for this year has just been issued and shows remarkable achievement in the application of flying to forestry work and fire protection during the past season. In this connection the Keewattin Lumber Company has borrowed from the Air Board a dirigible balloon 143 feet long, 75 H. P., and hope to try this out in their forestry work next year.

### QUARANTINE AREA CHANGED

Ten towns in New Hampshire, Massachusetts, and Rhode Island are transferred from lightly infested gipsy moth area to the generally infested gipsy moth area according to regulations supplemental to a notice of quarantine No. 45 on account of the Gipsy Moth and Brown-Tail Moth. The amendment became effective January 1, 1922 according to an announcement made by the Federal Horticultural Board of the United States Department of Agriculture. This transfer is based on actual condition of infestation and will simplify the enforcement of the quarantine by lessening the inspection and certification. The towns included are Fitzwilliam, N. H.; Royalston, Athol, Phillipston, Templeton, Hubbardston, Rutland, Paxton, and Leicester, Massachusetts and Narragansett, Rhode Island.

### STATES' APPROPRIATIONS FOR FORESTRY

Reflecting the growing public interest in timber production and the need for forest protection and reforestation throughout the country, State appropriations for forestry show an increase of 78 per cent over those of 1919, according to figures compiled by the Forest Service, United States Department of Agriculture. The total appropriation by 32 State legislatures for 1921 amounted to \$4,065,434. New York leads, with over \$1,000,000, and Pennsylvania holds second place, with \$860,000. The greatest percentage of increase is shown in California, where the forestry appropriation of \$45,800 for 1919 was raised to \$398,800 for 1921, or 771 per cent. Kentucky, Minnesota, and West Virginia alone show decreased appropriations.



## BOOK REVIEWS

**THE DRAMA OF THE FORESTS**—By Arthur Heming. Doubleday Page, \$5.00.

A splendidly written, inspiring story of the wilds of Northern Canada. Fascinating, entertaining and filled with real facts about real people. One reviewer says of it: "The picturesque life of the Northern forests is departing—the glory and romance of the old Hudson's Bay Factors have passed their zenith. But Arthur Heming has caught it—and held it—and passed it on to you." The book is beautifully illustrated with reproductions in color of paintings owned by the Royal Ontario Museum.

**CITY HOMES ON COUNTRY LANES.**

By William E. Smythe. (Macmillan). \$2.50.

Designated as the "philosophy and practice of the Home-in-a-Garden" this volume is the first of three books designed to deal with one general theme. Together, they will present a practical program for the making of what, in a spiritual sense at least may well be characterized as the New Earth—which, of course, could be nothing but new ways of using the Old Earth, to the end that it may in time produce a great new crop of homes and institutions. The plan calls for "garden cities," for the millions who are city-bound but who hunger for a touch of the open spaces; for "little-landings" or the science of most intensive cultivation and use of the individual small holding, and for "rural settlements"—forty acres and upward—developed in accordance with the highest modern ideals, as already in practical application, and this volume covers the first phase of the program.

## LUMBER SALESMANSHIP

The New York State College of Forestry at Syracuse University believing that more efficient and complete utilization of the products of our American forests is practicing as good forestry as replanting cut-over areas, leaving seed trees to reforest areas that are being lumbered, protection from forest fires, etc., and that lumber salesmanship is a phase of lumbering seriously needed by this great American industry, recently offered such a course to students specializing in lumbering and wood utilization. This is the first course of its kind in American forestry schools.

## BOOKS ON FORESTRY

AMERICAN FORESTRY will publish each month, for the benefit of those who wish books on forestry, a list of titles, authors and prices of such books. These may be ordered through the American Forestry Association, Washington, D. C. Prices are by mail or express prepaid.

FOREST VALUATION—Fillibert Roth.....	1.50
FOREST REGULATION—Fillibert Roth.....	2.00
PRACTICAL TREE REPAIR—By Elbert Peets.....	2.35
LUMBER MANUFACTURING ACCOUNTS—By Arthur F. Jones.....	2.10
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CHEMISTRY OF PULP AND PAPER MAKING—By Edwin Sutermeister.....	6.10
CHINESE FOREST TREES AND TIMBER SUPPLY—By Norman Shaw.....	2.50
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TREES AND SHRUBS—By Charles Sprague Sargent—Vols. I and II, 4 Parts to a Volume—Per Part.....	5.00
THE TRAINING OF A FORESTER—Gifford Pinchot.....	1.25
LUMBER AND ITS USES—R. S. Kellogg.....	2.15
FORESTS, WOODS AND TREES IN RELATION TO HYGIENE—By Augustine Henry.....	5.25
DEVELOPMENT OF FOREST LAW IN AMERICA—By J. P. Kinney.....	2.60
STUDIES IN FRENCH FORESTRY—By Theodore S. Woolsey.....	6.10
FOREST PHYSIOGRAPHY—By Isaiah Bowman.....	5.10
KEY TO THE TREES—Collins and Preston.....	1.50
THE FARM WOODLOT—E. G. Cheyney and J. P. Wentling.....	1.75
IDENTIFICATION OF THE ECONOMIC WOODS OF THE UNITED STATES—Samuel J. Record.....	1.40
PLANE SURVEYING—John C. Tracy.....	3.50
FOREST MENSURATION—Herman Haupt Chapman.....	5.00
FOREST PRODUCTS, THEIR MANUFACTURE AND USE—By Nelson Courtland Brown.....	4.15
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GETTING ACQUAINTED WITH THE TREES—J. Horace McFarland.....	1.75
HANDBOOK OF TIMBER PRESERVATION—Samuel M. Rowe.....	5.00
TREES OF NEW ENGLAND—L. L. Dame and Henry Brooks.....	1.50
OUR TREES, HOW TO KNOW THEM—By Clarence M. Weed.....	3.50
TREES, SHRUBS AND VINES OF THE NORTHEASTERN UNITED STATES—H. E. Parkhurst.....	1.50
TREES—H. Marshall Ward.....	1.50
OUR NATIONAL PARKS—John Muir.....	1.91
PRACTICAL FORESTRY—John Gifford.....	2.50
MANUAL OF THE TREES OF NORTH AMERICA—By Charles Sprague Sargent.....	12.50
THE IMPORTANT TIMBER TREES OF THE UNITED STATES—S. B. Elliott.....	2.50
MANUAL OF FORESTRY—VOL. I—Ralph C. Hawley and Austin F. Hawes.....	3.50
THE PRINCIPLES OF HANDLING WOODLANDS—Henry Solon Graves.....	2.50
SHADE TREES IN TOWNS AND CITIES—William Solotaroff.....	3.50
THE TREE GUIDE—By Julia Ellen Rogers.....	1.00
MANUAL FOR NORTHERN WOODSMEN—Austin Cary.....	2.12
THE THEORY AND PRACTICE OF WORKING PLANS (in forest organization)—A. B. Recknagel.....	2.50
ELEMENTS OF FORESTRY—F. F. Moon and N. C. Brown.....	3.50
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FRENCH FORESTS AND FORESTRY—By Theodore S. Woolsey, Jr.....	3.10
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THE BOOK OF THE NATIONAL PARKS—By Robert Sterling Yard.....	3.10
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\* This, of course, is not a complete list, but we shall be glad to add to it any books on forestry or related subjects upon request.—EDITOR.

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Mr. C. M. Thomas, 215 W. 40th St., Savannah, Ga., purchased a Rochester Peach from us last February, and picked the first fruit in July.

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## FOURTH SOUTHERN FORESTRY CONGRESS

With February 6, 7, and 8 definitely set as the dates for the Fourth Southern Forestry Congress, President Roy L. Hogue of the Congress announces that plans are progressing for the meeting at Jackson. The Mississippi Legislature will be in session at that time, and the foresters are confident that favorable action will be taken in forestry matters. A comprehensive forestry bill will be introduced in to the Legislature at the recommendation of the Reclamation Commission which was created by the last Legislature. P. P. Garner, Commissioner of Agriculture, is president of the Commission, and J. T. Ward of Waynesboro, who is also a lumberman and member of the House of Representatives, is secretary. The Commission has delved deep into the question of forestry in Mississippi, and their recommendations will carry much weight.

"We feel that the convening of the Fourth Congress at Jackson while the forestry bill is under consideration will go far towards focusing public attention on this topic", says Mr. Hogue. "While the Southern Forestry Congress as an organization is not committed to any specific bill, we are always eager to further the passage of any forestry legislation which has local support. In other words, we do not aim to 'mix' in any way with local politics, but aim to bring to each State an account of what the other States of the South are doing along forestry lines. In this way we can render the most effective assistance in arousing enthusiasm for forestry."

The program of the Congress as tentatively arranged includes a number of subjects of first interest to the lumber industry. Among these are the knotty problems of the taxation of forest lands, which was the center of a large part of the discussion at New Orleans on November 14 and 15, when the Forestry Policy Committee of the National Chamber of Commerce called on the Southern lumbermen and conservationists to express their views on forestry. Every effort will be made to secure the attendance of the Tax Commissioners from Southern States, many of whom are alive to the burdens under which the lumberman or land-owner labors when he undertakes to practice conservative lumbering or outright reforestation. Other topics of particular interest to the lumbermen will be national forestry policies, and minimum silvicultural requirements for the South. The latter is the technical title for the study which is being made by the Southern Forest Experiment Station and Austin Cary of the Forest Service of the measures which are necessary to keep forest lands reasonably productive of timber. The topic covers the question of seed trees, slash disposal, and fire protection, as ap-

## HARDY AVOCADO DISCOVERED IN ECUADOR.

A variety of avocado, or alligator pear, the fruit of which attains a weight of 18 ounces and the trees of which will stand some frost, has been sent to the office of foreign seed and plant introduction, United States Department of Agriculture, by Wilson Popenoe, plant explorer in South America, and buds of it are now growing in the department greenhouses. Curiously, the new avocado, hardier against cold than the ordinary West Indian and Guatemalan varieties, was discovered in Ecuador, a country situated on the Equator. The region, hitherto unknown as producing this fruit, is in what is known as the Chota Valley, 6,000 feet above sea level, giving a climate comparable to many regions much farther north. Most of the fruits of varieties of this Mexican race are small. This one has fruits comparable in size with those of the more tender races. Regions occasionally visited by a temperature of plus 18 degrees F. have produced bearing trees of the Mexican avocado.



plied to all types of forest, including the hardwood lands and cypress brakes. Other subjects to be discussed at the meeting include forestry in the public schools, the forests and our navigable streams, and forest fires. The list of speakers will be announced at a later date.

#### WOOD LOT NEEDED ON FARMS

Iowa farmers use between \$6,000,000 and \$10,000,000 worth of lumber annually, according to the forestry department at Iowa State College, and this bill will soon be doubled, unless they economize in the use of the better grades and give attention to the treatment of forest products. The farmer is the largest user of wood in the United States, say the forestry experts, who estimate that 46 per cent of all wood used annually goes to the farms. Not only does the farm require much timber and wood for posts, fuel and minor supplies but the average farm each year uses 2,000 board feet of lumber for buildings.

Better grades of building lumber, such as pine, cypress and oak, according to I. T. Bode, extension service forester, are getting scarcer every day, but in spite of this there is a greater demand than ever for lumber and posts on the farm. Building and repair work on the average farm are at present below normal but there will soon be a greater call for lumber.

To meet this demand Mr. Bode advocates the farm woodlot. Every farm should have a planting of trees of different varieties and this should be placed on waste land that will not produce a good agricultural crop. By the planting of rapid growing softwood trees, serviceable lumber will result in ten years time and these woods can be treated with creosote or other preservative and last as long as the better grades of hardwoods.

In order to start this work in Iowa the extension service has established a forestry department which will endeavor to increase the use of softwood fence posts by treatment; establish more woodlots in Iowa and have them managed in a definite manner and placed on the wasted corners and poorer land of the farms; and to provide permanent farm protection by establishing shelterbelts for animals and buildings that will return wood for farm uses.

#### OF INTEREST TO USERS OF WOOD WASTE

The Wood Waste Exchange of the U. S. Forest Service has been transferred from Washington to the Forest Products Laboratory, Madison, Wisconsin, where its future activities will be centered. The Exchange has in the past contributed much towards more complete utilization of wood, by supplying a medium through which the mills and wood-using factories could locate markets for their side lumber and short lengths, and wood-consuming factories sources of material of this character which would meet their requirements.

Centering the activities of the Exchange at the Forest Products Laboratory will permit an expansion of this service, in that it will be possible to include suggestions as to markets and new uses for by-products and low grade material, based on the latest results of technical research carried on by the Laboratory.

All communications should be addressed to the director, Forest Products Laboratory, Madison, Wisconsin.

#### YELLOWSTONE OUR GREAT FISHING PRESERVE

In order to insure the reputation of the Yellowstone National Park as the greatest fishing preserve in the United States the National Park Service in cooperation with the United States bureau of Fisheries carried on the restocking of the Lakes and streams of the Yellowstone this past season on a greater scale than ever before. The Government fish hatchery was maintained on Yellowstone Lake during the season with excellent results. The total collection of eggs of native trout in the park was 5,996,000 which were developed to the stage of eyed eggs and fry and 2,871,000 of these were returned to the waters of the park and the balance, except, of course, the ordinary losses incident to hatching and transportation, were distributed to points outside the park. In addition to those collected in the park, there were distributed in park waters from outside hatcheries 2,800,000 fry or a total of 4,051,000 fish. This is double the amount of fish planted in 1920. The species were Eastern brook,

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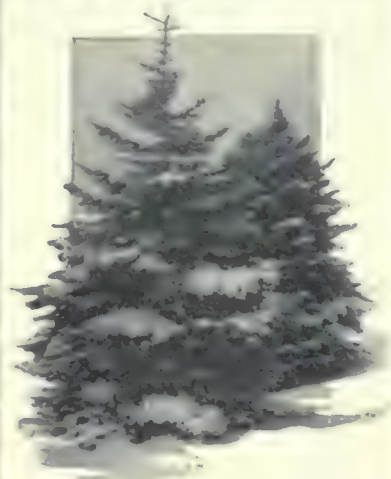
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Winsted, Conn.

grayling, rainbow and black spotted trout.

The theory advanced by some to the effect that Yellowstone Lake, the largest lake at an altitude of 7,700 feet in the world, contained insufficient food for the large numbers of native trout which are found in its waters is not sustained by Professor Richard R. Muttkowski of the University of Idaho, who studied the question of available food supply for fish in park waters.

With greater and more scientific restocking of park waters each year, the Yellowstone is truly the fisherman's paradise.

## CALIFORNIA'S NEW STATE FORESTER

M. B. Pratt has been appointed by Gov. William D. Stephens of California to the position of state forester, to succeed G. M. Homans, who died on November 20th.

Mr. Pratt, who is a native of Paw Paw, Illinois, was graduated from the University of Chicago in 1903 and from the Yale Forest School in 1905, then entering the United States Forest Service as forest assistant, being assigned to California. Following the first year of his work on general investigation he was assigned to the Tahoe National Forest, where he remained for



M. B. PRATT

about eight years, being promoted to deputy forest supervisor.

In 1914 he was appointed assistant professor of forestry at the University of California, remaining for four years and specializing in wood utilization and wood technology.

He then accepted a position as deputy state forester, with headquarters at Sacramento, and has now been advanced to the head of the department. The chairman of the California State Board of Forestry is former Gov. George C. Pardee.

## OHIO FEDERATION RESOLUTION

The Ohio Federation of Women's Clubs in annual convention in December passed strong resolutions urging the passage of national forestry legislation and pledged its support to the American Forestry Association in its efforts in this field, as follows:

"Whereas, Forest Fires in the United States destroy timber valued at \$20,000,000 every year; and

"Whereas, Industrial demands take forest products four to four and one half times faster than we are producing them; and

"Whereas, The American Forestry Association says a crisis is fast approaching this country because of lack of national forest policy the principles of which have already been approved by the General Federation of Women's Clubs; therefore,

"Resolved, By the Ohio Federation of Women's Clubs that we do all in our power to aid the American Forestry Association in its educational campaign looking to the replenishing and perpetuation of our forests."

## FOR STATE PARKS

The Natural Parks Association of Washington is campaigning vigorously for preservation of highway timber and creation of more state parks throughout the commonwealth. At the annual meeting December 20 last at Tacoma, the association advocated that one or more stands of virgin timber of at least 160 acres each be preserved on each of the main highways; that all of the remaining timber along the Sunset Highway between Naches Bend and Lake Keechelus be saved, and that at least 10 per cent of the receipts of the state motor vehicle license fund be used in obtaining such park and recreation areas. In all, 24 parks were to be acquired and administered by the state parks committee in the near future, if the association's recommendations are carried out. At present Washington has 12 state parks.

The state parks committee is composed of three members, the state treasurer, secretary of state, and the commissioner of public lands. This committee is empowered by statute to set aside timbered portions of state lands adjacent to highways. There is no limit to the areas that may be reserved. As the state owns considerable stretches of timber bordering various highways, it is anticipated that several suitable park sites will be selected therefrom, thus eliminating the necessity of expending public money for some of the proposed parks.

In addition to the preservation of state timber, the association wants all federal owned timber along highways which traverse the National Forests reserved



permanently maintained for the recreational use of the public. As the United States Forest Service favors the preservation of the highway timber under its jurisdiction, this aim of the association may eventually be realized.

### WHITE PINE BLISTER RUST IN BRITISH COLUMBIA

Discovery of white pine blister rust in British Columbia on cultivated black currants by Prof. J. W. Eastham, Provincial Pathologist, British Columbia, is of great importance to the United States because of the extensive and highly valuable western white pine and sugar pine forests in the West. The rust has been found in several localities on Vancouver Island, including Victoria, Nanaimo, Comox, and Courtenay, and on the mainland at Vancouver, New Westminster, Chilliwack, and Agassiz. The discovery of the rust by Professor Eastham was made on September 16, 1921. Since that time the agents of the Office of Blister Rust Control of the United States Department of Agriculture have visited British Columbia to study the distribution of the disease. White pines (*Pinus strobus*), grown from seed in Stanley Park at Vancouver were found diseased. Specimens of these pines were referred to the Department of Agriculture at Washington, D. C. These have been identified as being affected by the white pine blister rust, *Armatium ribicola*. Further scouting carried on by Federal agents has revealed the rust on cultivated black currants at Sumas City, and Mount Vernon, Washington.

White pine blister was brought to America from Europe during the past 20 years, and has already done much harm. There is widespread infection in the white pine forests of the Northeastern States, and the disease is spreading in Wisconsin and Minnesota.

### NEW YORK CITY FORESTERS

The New York Forest Club, consisting of the foresters in and about New York City, has, after a year of informal organization, made itself a definite organization for the discussion of forestry problems, and has elected E. A. Sterling, Chairman, and O. J. Porter, Secretary. The Club will hold monthly meetings, to which all foresters visiting in the city are invited, the meeting date being fixed as the second Tuesday of each month, with a 1 o'clock luncheon at the Yale Club. An effort will be made to have the foresters of the entire country arrange their visits to New York, when possible, as to be present at this time. It was a surprise to most of those present to learn that in New York district there are about eighty forest school graduates. Several of these are connected with commercial concerns in their professional capacity, especially those in the paper industry which is going more and more deeply into the forestry problem.

### HOW DID THEY GET THIS WAY?

By S. C. Martin

This is a long leaf pine, six feet apart at the ground, crossed, but not joined, at a distance of seven feet from the root of the tree, and at a height of thirty feet the two trees are joined together, and as is



THE DOUBLE PINES

"Double Pines" growing on Pine Mountain, in Harris County, Georgia, ten miles from Hamilton, and near Columbus.

shown in the picture, the two trees form one complete tree.

The photograph was furnished AMERICAN FORESTRY by J. O. Martin, of the Department of Education, of Georgia.

### FOREST FIRE PROTECTION

The State of Washington spent \$37,000 in 1921, out of a \$100,000 legislative appropriation, for fire protection in the windfall area on the Olympic Peninsula. Approximately eight billion feet of fir, spruce, hemlock and cedar timber, blown down by the tornado of January 29, 1921, served to make a gigantic fire trap covering 2,200 square miles of wilderness bordering the Pacific Ocean. Fire once started there would have caused untold damage before it could have been checked either by human agencies or by burning itself out, the latter the more probable eventuality. But, due to the preventive measures taken by the federal government and the state, the hazard was reduced to a minimum. Jointly with the government, the Washington Forest Fire Association, and the Clallam Lumber Company, the state constructed large water tanks at strategic points along

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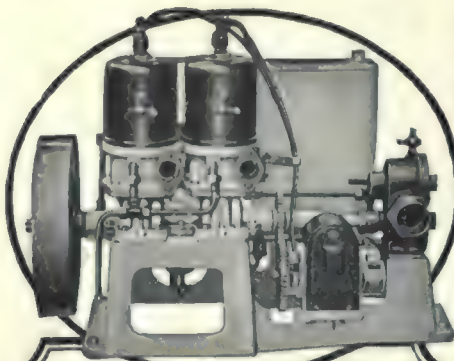
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the Olympic Highway for 42 miles through the storm zone. These water tanks supplied wagons, which in dry weather wet down the growth beside the roadway. Adequate fire patrols were maintained, and a detachment of National Guard troops regulated tourist travel in the danger area. Stringent fire regulations were rigidly enforced. Smoking was prohibited and no campfires could be kindled except at designated spots.

The coming summer the fire menace will be much more serious than during that of 1921. The dead foliage, needles and wood splinters will be thoroughly seasoned, and the new green growth will not be sufficiently heavy to keep the debris and top soil from becoming exceedingly dry. Safeguards additional to those employed last year are contemplated. The state has \$67,000 to spend during 1922 for continuing and expanding protective work on the Peninsula.

### SPARK ARRESTERS

THE Forest Products Laboratory of the Forest Service has undertaken a study of the efficiency of locomotive spark arresters, which is being conducted by Mr. J. S. Mathewson, a mechanical engineer of wide experience. Many spark arresters at present in use are inefficient and comparatively little is known as to their relative value and efficiency. The results of the study will be of far-reaching value, particularly at this time when the impending scarcity of fuel oil is forcing many railroads to revert to coal for fuel.

### RECREATION IN THE FOREST

Outdoor recreation ranks today as one of the major resources or utilities of the National Forests, according to Col. W. B. Greeley, Chief of the Forest Service, who states that this is not because of anything the Government has done to facilitate or increase this form of use, but because of the demonstrated belief of several million people that the Forests offer a broad and varied field of recreational opportunities.

According to the figures received from the forests just compiled, there was a total of 973,652 visitors to the National Forests of Oregon and Washington during 1921. The Washington national forests had 550,460, while the Oregon forests had 423,192.

The Forester emphasizes the fact that the presence of large numbers of people on favored recreation areas creates problems of sanitation, of public health, and of protection of public property which can not be safely ignored. He says that counties, municipalities, forest recreation associations and other semi-public organizations and in some cases individual citizens are doing much by generous donations and constructive planning to relieve the situation. They have installed toilets, fireplaces, shelters, sources of water supply, tables and benches, refuse depositories, parking places, and other almost indispensable facilities.

"After the fullest possible co-operation has been secured, however, there will remain many important recreation areas where action by the Government will be necessary to preserve public health and property. The Government should install necessary sanitary and protective facilities upon camp grounds where other means of improvements are unobtainable. The estimate submitted of \$10,000 to meet the cost of work of this kind during the fiscal year 1923 is but a tithe of the amount needed, but it will provide for a few of the most urgent cases.

"The presence of game," the forester points out, "adds to the attractiveness of the National Forests not only to hunters but to residents generally, and anything that contributes to the abundance and variety of game increases the value of the Forests for public purposes. One of the outstanding requirements for the perpetuation of the game resources of the National Forests is a considerable number of small, well-distributed game refuges, within which the rapidly diminishing stocks of valuable mammals and birds may rear their young free from molestation, thus maintaining upon the surrounding lands a normal overflow or drift to supply the hunter, naturalist, and lover of the wild. The National Forests contain many areas remote, inaccessible, and largely unsuited for the grazing of domestic stock, which might

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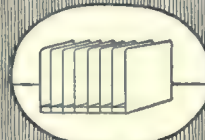
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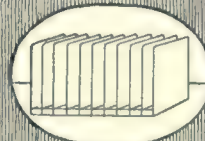
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advantageously be devoted to this purpose. The dedication of such areas to the protection of game would be purely a function of land management, the State's control over the game being unaffected. Several excellent bills are now pending in Congress. A law of this kind, generally applicable to all National Forests, should be enacted.

"Supplementary to the establishment of suitably located game refuges which would serve as breeding places, there should be," declares Col. Greeley, "definitely formulated plans for wild life administration. The animal life of the forests—that is, their native population, beast, bird, and fish—should be regarded and handled in precisely the same way as their plant life, their tree growth and forage growth. Under skillful management the quantity produced can be increased, its kind regulated, and its most desirable utilization secured. Unregulated use means its impairment; intensive use, often its eventual destruction as a resource."

## FISH INVESTIGATIONS SHOW SOME OLDER LAKES CONTAIN LESS FISH.

This may be due to untoward changes in breeding areas. Is your lake deteriorating? I examine, report and adjust. Literature on request. ERNEST CLIVE BROWN, Box 197 F, Station G, New York City.

## NEW YORK'S FIRE LOSSES

A summarization of the statistics compiled by the Conservation Commission for the past year, shows 1921 to have been the most serious fire year since 1903 and 1908, but the very effective protection accorded kept the losses at a minimum. The figures show that with a total of 633 fires, and an area of 26,663 acres burned over, the total loss amounted to only \$49,920, and the entire expenditure for fighting fire for the year came to \$62,812.88.

## STANDARDIZATION OF WOOD-TESTING METHODS

The American Society for Testing Materials and the U. S. Forest Service have been designated by the American Engineering Standards Committee as joint sponsors for the development of uniform standard methods of testing wood. This action was taken as the result of a canvass made of the principal national bodies concerned with the proposed project, from which it was apparent that there is a real demand for the work, and that the joint sponsorship here indicated would be acceptable to the industry.

## 14,000 FIRES IN PULPWOOD FORESTS

There were 14,463 forest fires in the pulpwood regions of the United States during 1920, burning over 2,059,408 acres, according to a report compiled by the Woodlands Section of the American Paper and Pulp Association, in co-operation with the United States Forest Service.

The tremendous losses by fire tremendously handicap the paper manufacturers in their efforts to determine a future forest policy for this industry, for the problem of artificially planting new forests would be enormously minimized if the loss by fire in growing forests could be eliminated.

In the New England states alone there were 2,419 fires, of which 1,619 were in Massachusetts, 164 in Maine, 542 in New Hampshire, 54 in Vermont and 40 in Rhode Island. The area burned over in Maine was the largest of this group, being 39,803 acres. Fires this year have done even more damage, though no figures are yet available, and the same is probably true of New York. Here there were 479 fires in 1920, burning 35,176 acres.

In the group of states including Pennsylvania, Maryland, Ohio, Virginia, West Virginia, North Carolina and New Jersey there were 4,928 fires, of which 1,597 were in Pennsylvania and 1,644 in North Carolina, burning 646,648 acres.

In the lake states of Michigan, Wisconsin, Minnesota, there were 776 fires, burning 114,910 acres, and in the great forest states of Washington, Oregon and California, there were 4,861 fires, burning 646,648 acres.

The total damage by these fires throughout the country was \$6,319,641.

Col. W. B. Greeley, Chief Forester of the United States Forest Service, has said that if the forest fire menace could be eliminated, the problem of future forests for the country would be greatly simplified.

## QUARANTINE AGAINST SATIN MOTH

A Federal quarantine, effective January 1, against New Hampshire and Massachusetts to prevent the spread of the satin moth, a dangerous insect pest newly discovered in this country, has been announced by the Federal Horticultural Board, United States Department of Agriculture. The action by the department follows a hearing held here in December, when various phases of the situation were discussed.

## WANTED

Pine Cones, green or brown, still on the trees and closed, containing seed. Will pay \$3.00 a bushel picked and sacked; extra for bags; Hemlock and spruce less in proportion. Telephone Elmsford 1710 or write P. O. Box 281, White Plains, N. Y.

## ATTENTION, FORESTERS

AMERICAN FORESTRY will print, free of charge in this column, advertisements of foresters wanting positions, or of persons having employment to offer foresters. This privilege is also extended to foresters, lumbermen and woodsmen, discharged or about to be discharged from military service, who want positions, or of persons having employment to offer such foresters, lumbermen or woodsmen.

## POSITIONS WANTED

POSITION wanted as Forester or Superintendent on a private estate or otherwise, by a thoroughly practical, experienced, married man. English. Competent to take charge of any foresters' post in every detail. Can undertake the control of a saw mill; building roads, nursery work, landscape planting, tree work, and handling help. Good references. Address Box 3040, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (1-3-22)

FORESTER—Experienced in cruising and general woods work, also Aerial Photograph Interpretation, would like position with Pulp or Lumber Company. Address Box 3045, in care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (1-3-22)

WINTER POSITION wanted with lumber company as time keeper or similar work. Graduate of high school and ranger course, 25 years old, good references from previous employers. Address Box 3030, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (10-12-21)

FORESTER—Graduate of Penn State, 28 years of age, desires work in Forestry or allied lines. Varied experience in Forestry and lumbering. Served with 10th Engineers and with Wood Supply Branch in France. Will consider any outdoor work with a future. Address Box 3035, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (10-12-21)

POSITION WANTED BY TREE SURGEON.—Ex-service man wishes employment with some tree surgery company; 37 years old and can do any kind of tree surgery work. Can handle men and also understand landscape work. Address Box 3055, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (2-4-22)

RECENT GRADUATE four-year forestry course, aged 22, desires position with lumber company. Address Box 3050, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (2-4-22)

FORESTER—Has year's leave of absence from teaching duties, beginning October 1, 1922. Wide experience along Forestry lines—cruising and handling men, gained in the U. S. Forest Service, teaching and in the A. E. F. Will go anywhere, Alaska preferred, and tackle difficult proposition. Address Box 3060, AMERICAN FORESTRY MAGAZINE, Washington, D. C. (2-4-22)

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## KILN DRYING COURSE

Since the announcement of the correspondence-study course Kiln Drying of Lumber by the Extension Division of the University of Wisconsin less than two years ago, almost 400 persons have enrolled. This course has been developed through co-operation of the United States Forest Products Laboratory. Men from 37 States of the Union and seven foreign countries have taken up this mail instruction to learn more about the art of operating dry kilns, and the proper handling of lumber in general.

This correspondence-study course is an outgrowth of the resident short courses which have proved so successful at the United States Forest Products Laboratory, located on the University campus. It was early recognized that much of the information on improved methods of kiln drying could be taught by mail. Many men who cannot avail themselves of the class instruction in Kiln Drying given at regular intervals at Madison enroll for the correspondence-study course and so obtain valuable information upon the latest developments in the seasoning of wood.

## ALASKA ONCE SUBTROPICAL

The ancient vegetation of the Arctic region, as is shown by a study of its fossil plants, indicates that its climate was once very unlike that which prevails there now. Instead of consisting of a handful of small plants struggling for life amid snow and ice in a scant, almost perpetually frozen soil, its vegetation was abundant and luxuriant and included ferns and palmlike plants that grow only in a mild and probably frostless climate. This vegetation flourished in the Arctic region from at least late Paleozoic to middle Cenozoic geologic time, millions of years ago, before man existed. Although these lands are now so inhospitable and are rarely visited, the United States Geological Survey has gathered a large amount of information concerning their fossil floras.

A study of the coal beds of the Cape Lisburne region has incidentally disclosed many fossil plants. These coal beds are extensive and are the only known commercially valuable mineral resources of that region. A little coal is occasionally mined for vessels that are short of fuel, which, as there is no harbor, lie offshore and perilously load on a few sacks of coal by means of lighters.

Cape Lisburne is the bold headland which marks the northwest end of a land mass that projects into the Arctic Ocean from the western coast of Alaska about 160 miles north of the Arctic Circle and about 300 miles directly north of Nome. Even Cape Lisburne is by no means the northern limit of the fossil plants of this nearly tropical vegetation, for they have been found in the rocks 180 miles northeast of Cape Lisburne.

## "FORESTRY LECTURES"

The public lecture courses given by the New York State College of Forestry are being arranged for the winter and spring seasons.

Last year the college staff gave 234 talks on forestry and related subjects throughout 41 counties in the State of New York and reached 63,000 people. At the same time many communities requested lectures which could not be given, owing to limited funds and lack of time.

This year the college is offering the same service. Talks will be given, illustrated by lantern slides where possible, on such subjects as "The Forest of New York," "Farm Forestry," "A National Need—Forestry," "The Life and Work of a Forester" etc. Prof. Arnold, of the Landscape Extension Department, will speak on subjects relating to civic improvement, ornamental trees, parks and other landscape matters. Prof. H. L. Henderson is prepared to talk at some of the important wood-working centers of the State on various practical phases of lumber kiln drying practice.

Lectures are given free wherever four or five lectures can be arranged in one county in one trip. Each organization is requested to guarantee an audience of fifty persons. These requirements have been made necessary in order to obtain a more judicious use of college lecture funds and to reach the largest number of people in a given period.

## MAINE FORESTRY ASSOCIATION

The Maine Forestry Association met in annual convention January 6-7, and a full and valuable program was presented. The sessions were well attended by enthusiastic people and much was accomplished. The Association in its closing session on Saturday at the State House expressed in resolutions its strong opposition to the proposed transfer of any part of the United States Forest Service from the Department of Agriculture to any other department. It also urged that the Legislature of the State of Maine provide ample to develop the State School of Forestry to full technical and practical efficiency in order to make possible the training of young men in forestry within the State and to provide the public institution in forestry. The final session was marked with interest and enthusiasm in the topics presented for discussion, and a very profitable and instructive program was carried out. Undoubtedly it was the most successful and valuable convention ever held in the interests of forestry in the State.



# AMERICAN FORESTRY <sup>129</sup>

THE MAGAZINE OF THE AMERICAN FORESTRY ASSOCIATION

WASHINGTON, D. C.

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## CHANGE OF ADDRESS

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## THE ASSOCIATION'S FORESTER

**D**EVELOPING a plan which has been under consideration for some time the Board of Directors of the American Forestry Association has secured a special fund for the employment of a technical forester. A committee has selected Mr. Ovid M. Butler, assistant director of the Forest Products Laboratory, at Madison, Wisconsin, for the position, and he joined the Association on March 1.

Mr. Butler is one of the leading foresters of the United States and his several years of service in various branches of his profession fits him admirably for the important duties he will have to undertake as forester for the American Forestry Association.

Mr. Butler is a Hoosier by birth, and was graduated from Butler College, at Indianapolis, Indiana, in 1902 with a degree of A. B. He then spent three years at Indianapolis in newspaper work, first on the Indianapolis Star, and later on the Indianapolis News. In the fall of 1905 he entered the Yale Forest School, from which he graduated in 1907 with the degree of Master of Forestry.

On July 1, 1907, he entered the Forest Service and was assigned to the Boise National Forest, Idaho, as Forest Assistant. After six or eight months service he was made Deputy Supervisor of the same forest, and in the fall of 1908 the Forester transferred him to Ogden, Utah, as Assistant Chief of Silviculture in District 4. In 1910 he was transferred to Missoula, Montana, in the same capacity in District 1, and arrived there just in time to participate in the worst fire season which that district has ever experienced. A year later he was promoted to Assistant District Forester and transferred back to the intermountain district in charge of Silviculture.

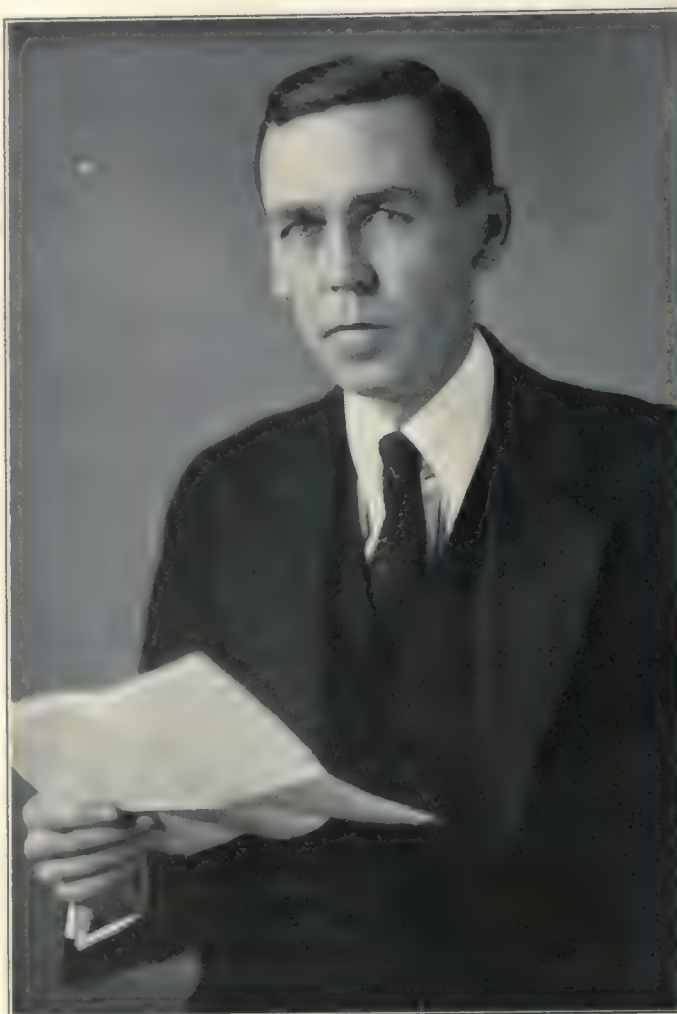
He spent part of 1914 and all of 1915 in directing a study of lumber distribution. This was a part of the lumber study series conducted at that time. The results of his work appear in Reports Nos. 115 and 116, entitled "Distribution of Softwood Lumber in the Middle West."

One report deals with the wholesale, and the other with retail distribution. They are the most comprehensive analyses of the distribution of lumber from the mill to the ultimate consumer that have ever been made. In April, 1916, he was transferred to Albuquerque and placed in charge of the office of Silviculture in the Southwestern District; and on the outbreak of the war, a year later, he was transferred to Madison as Assistant Director of the Forest Products Laboratory, a position which he has since occupied.

He participated in the preparation of the now much quoted Capper Report, and is the author of the chapter in that report entitled "Forest Depletion and Lumber Prices." From time to time he has written quite a number of articles which have appeared in different periodicals. Among them are the following:

"Forest Conservation by Better Utilization," "The Price We Pay for Lumber," "The Forest Supply in Relation to the Needs of Industry," "Research and Boards," "Wood Using Facts for Wood Using Lore," "The Movement of Wholesale and Retail Lumber Prices in the Middle West in Relation to the Timber Supply," "The Relation of Research in Forest Products to Forest Administration," "The Government and the Forest," "Built-up Wood," etc.

Mr. Butler will make his headquarters with the Association in Washington, but a great deal of his time will be spent in field activities so that he can



OVID M. BUTLER

Forester of the American Forestry Association

keep in close touch with forestry conditions in various states and assist in efforts to secure better forestry laws, to aid in organizing forestry activities in the states and to attend meetings at which forestry is to be discussed. There will undoubtedly be a widespread demand for Mr. Butler's attendance at conventions and other gatherings and for his advice and guidance in forestry development of various kinds. His services are expected to add largely to the effective work which the Association is now doing and to make its accomplishments greater than ever.



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## LOGGING MAHOGANY IN TROPICAL WEST AFRICA

By Veeder Bertrand Paine

**T**HERE are many features incident to getting out mahogany logs in tropical West Africa, and many difficulties to be overcome from the stump to the hold of a cargo steamer enroute to the mills in the United States.

The title to the trees must first be secured from the native chief, and this alone presents problems to be solved by the white man. For many years the natives have shipped squared mahogany timber to the Liverpool market, and trees of the size required to comply with the Colonial Forestry regulations, nine feet in circumference, are not plentiful near to the banks of log-driving streams. Having secured a goodly supply of trees, I began the work of organizing logging operations, on a scale sufficient to furnish five to six million feet to the mills in the United States annually.

No white man accustomed to logging work was to be found on the coast. Neither cattle nor horses can live there; there are no factories or shops to supply the requisite tools; no streams cleared and fit for driving logs;

no booms in the Ancobra for holding logs in time of freshets; no harbor in which steamers can take cargo, which must be brought alongside in the open sea. It is four weeks by mail to the home office; one month by supply steamer from English ports, with countless minor difficulties to meet and new ones continually cropping up, so I may be pardoned for suggesting that this was rather a large order.

Each one of the great cargoes and each individual log in it has a history that would, if told, be of interest and full of strange incidents and exciting adventures, but I will present as briefly as I may, the methods by which the logs are gathered in such quantities, brought to the shipping point and placed on board the chartered steamers. The entire enterprise aptly has been termed a



A MAHOGANY LOG HAULING TEAM

Competition between men of various tribes to get the heavy logs to water in the quickest time frequently is a greater spur to hard labor than wages, abuse or praise.

pioneer proposition and to describe its working developments, we will start at the stump.

The foundation for a logging operation has already been laid by the ownership of the timber, and with an unlimited supply of the sinews of war always at command, the next important problem to be solved is the



question of labor. The term labor has, on this coast, an unusual significance, covering as it does, not only manual, but as well the work commonly performed by horses, mules, oxen or by steam power. The native of the Gold Coast is not running about looking for a job in a logging camp, preferring to fish, hunt, trade or to do nothing, letting his wives support him by their labor or by their wits, for the women are very keen as merchants. The main incentive for the young man to labor for wages is to earn the money with which to buy a few wives, the which accomplished, he needs not to toil nor spin. Another obstacle in the way of securing labor is the lack of confidence in the matter of payment of wages

master and man. The laborer, if so inclined, might after receiving his advance, fail to show at roll call, and the places that knew him well know him no more. On the other hand, the employer might, and often did, by smooth talk and fair promises, get his output for the season safely on board a homeward bound steamer, taking passage himself, leaving the unsuspecting laborers with their unpaid balances. The native employer finds the evading of payment more difficult. He cannot run away; he must stay and face the music. He ships his logs on the same kind of promises, but when, after long and weary waiting, the logs are sold and the sales account is received, the balance due, if any, is absorbed



CLEARING THE WOODS TO BUILD A LOGGING CAMP

The mahogany logging camps in West Africa are constructed to last for several years and to hold hundreds of native workers, and must be so arranged that different tribes or various clans of tribesmen may be somewhat separated.

when due. It seems that both natives and Europeans who heretofore have essayed to get out logs, either failed to bring their logs to a shipping point or, if succeeding in this, forwarded the lot to the Liverpool market; the laborer being forced to wait for the return from brokers' sales, and these more often than otherwise showing a debit balance for freight and selling charges.

Another and prevailing feature of hiring did not meet our approval; the practice being perhaps made necessary by this same lack of confidence, to pay each man on hiring, six months' wages in advance, no more to be paid until the end of the twelve months term of hire. This plan had its advantages and its disadvantages to both

by the local merchants, who have furnished tools and supplies and perhaps a little money, holding a lien on the logs as security. Again the laborer is found not worthy of his hire.

The contract system also is in vogue in some parts of the coast. The white man leases a tract of land said to carry mahogany timber trees. He then gives out to a native jobber a contract to bring to the mouth of the river a specified number of logs. The jobber hires his men and gives them an advance on wages, the cash being furnished by the white man. During the year, and as the work progresses, payments are made to the jobber, who spends the sum in other ways than in payment of



wages, and just before the beginning of the rainy season, when the men are most needed and there is no time to fill their places, they demand a settlement and payment of wages due. As nothing is due to the jobber, the white man refuses further advances; the jobber has spent the money; the laborers leave the work; and when the driving water comes the logs are left to come or stay, most of them stay. The high waters overflow the river banks, the floating timbers take to the woods and when the waters recede, are left in inaccessible places, hard to find and the cost of returning them to the bank is greater than to cut and haul new wood. The crew may bring suit and

Gold Coast is imported from Liberia and mostly from that district known as the Kru country.

The Government of Liberia demands a fee of five dollars a head for each man taken out of its country. To secure laborers from that country an agent must be sent to engage the required number and ship them on the first steamer calling at the port. Passage money is paid and on landing at Axim the entire party is lined up in front of the office, sorted into sizes and graded by apparent capacity for hard labor, names taken and wages fixed for the year on each grade and each individual, and the entire lot taken before the District Commissioner,



CALLING THE ROLL IN A MAHOGANY CAMP IN TROPICAL WEST AFRICA

Most of the native workmen are secured from Liberia, the government of which country requires the payment of a tax of five dollars each for every laborer who is allowed to leave to work in another country.

attach the logs where they are, but there is not any real value and both wages and logs are lost. These and similar misadventures do not serve to inspire confidence of natives in employers of labor.

In beginning active logging, I declined to make advances or to let contracts, insisting on the American plan of doing business, hiring men for a twelve-month term, on monthly wages, payable at the end of every three months. The people very soon learned that we had come to stay and that the pay was sure and the system gave entire satisfaction. The major part of labor on the

who asks each one as he touches the pen to verify his signature by mark, "You 'gree?" If the man can say yes he does so, if not he grins and retires down the line. The head man of the gang usually speaks for all. The days of waiting for a steamer at the point of departure and the two days of practical fasting en route, result in a very lank and hungry looking company and the change in their appearance after a week or two with the new Massa is remarkable. The Kru-men or, as they are called Kru-boys and this regardless of age, are either beach men or bush men, the former best for boatmen





A LOGGING CREW OF WANGARIAS—FROM THE DESERT TRIBES—ALL MOHAMMEDANS

or stevedoring and stowing cargoes; the latter are from the interior and best adapted to the work of logging.

After the crew has "signed on," as it is called, the requisite number of cooking pots and a large basin to each ten men, are furnished them, a generous ration of rice being issued to the cook of each division; and it often happens that the manager's sense of humanity prompts an issue of rice as the first step in the proceedings.

The Gold Coast native is invariably known by the name which stands for the day of the week on which he was born. The year and the month are not taken into account and the age of a dusky belle is uncertain. There are other parts of Liberia from which laborers are brought; and as the different districts are often either at open war, or are nursing old animosities handed down from one century to the next, the distribution of newcomers at the camps, calls for experience fortified by tactful patience and unlimited authority. At best all are clannish. The men from one neighborhood will not mix in the living arrangements of other Liberians from another district. They say, "Massa, they be no from my country." If from the same village—"Massa, they be my brothers." To these men "my country" means my native village; "my brother," any man from the same place; and indeed, the men from one neighborhood bear such close family resemblance that without further inquiry one would believe them to be really brothers as claimed. When asked if they have the same father or mother, it is found that, so far as known by them, there is no close kinship. When it so happens that two men are born of the same mother, they stick still more closely together; and, if, peradventure, the same mother and

father are held responsible for both, their pride of ancestry is great indeed.

These untaught and entirely uncivilized so-called heathens may well call each other brother. Their unselfishness puts civilized man to the blush. The smallest and youngest will share with his mates the least scrap of food that may be given to him. Among the many small boys that have served as house boys and table waiters, no women are employed for this work, not one ever has been known to fail to share any gift of eatables, no matter how tempting or how small a portion. Often a boy will carry his tid-bit all day and many weary miles and never so much as nibble at it, waiting to join his brothers at the end of the journey. "There ain't goin' to be no core" has no place in the heart of these heathen children.

After twelve years of logging with, at times, fifteen hundred people at work, there are now many old hands who understand our work well, and whether felling trees, cross-cutting logs, hauling, driving the streams or rafting, are competent and efficient. To get from this labor the best results, whether Liberians, natives of the Coast or from the far interior bordering on the desert, requires patience, tact and experience. Flogging is practiced in some quarters but this we do not permit. Kind treatment, patience to listen to grievances, firmness, justice in deciding all matters, but never yielding one jot or tittle to importunities or demands, give satisfactory results.

It often is the case that the native has not understood the white man's order and this may cause him to hesitate and so seem guilty of disobedience. To knock the



man down with fist or club, and perhaps beat him unmercifully, an unresisting creature, without a word of explanation, is the practice in places on this Coast, but less so in the British protectorate than elsewhere. Neither as manager nor as a man can I look upon the assaulting of one who is certain not to resist, as other than cowardly and brutal. When one of our laborers fails to do his duty or his work in a satisfactory manner, after a fair trial he is dismissed and paid. Plenty to eat, prompt payment, with a certain dismissal for cause, are forces in the control of black labor, requiring no aid from violence. No difficulty has yet arisen with our labor that one word from "Big Massa" did not settle without argument, nor any disturbance among themselves that a word from the same authority did not quell and this without threats of punishment or show of arms.

In West Africa the success of logging in all its branches depends to an unusual degree on the tact and

good judgment, as well as skill, of the camp foreman in immediate charge of the men. He should be able to know to a nicety the amount of work in each division that may be accomplished, not tomorrow or next day, but today. Knowing the size of the trees to be felled, the measurement of the logs to be hauled and the length and condition of



WAITING FOR A HEAVY RAIN TO CARRY THE LOGS DOWN STREAM

The water in the smaller streams frequently rises in a few hours from a mere trickle to a raging torrent and as quickly subsides.

the logging road, each set of workmen must be given its task for the day. The axmen and the sawyers know how many trees must be felled and how many logs cross-cut, and the hauling teams the number of logs each team must haul to the banking ground. Careful observation with experience, soon teaches the foreman the amount of work of each kind the crew will do, working the full day with everything favorable and the men all seeming to be working with a will. After a few weeks of pushing them for a record, it is generally a wise move to meet any indications of a feeling that they are working too hard or too long hours, by a suggestion that tasks or stunts will be given out and that when these are finished for the day, the day's work is done. It will be safe to add to the average day's work as much work

as ten per cent and, on occasion, even more than this and as a rule the stunts will be finished and the men in camp long before the ordinary quitting time. The point is that they are men and not brutes, and as each one is desirous of doing something for himself, he puts into the work not only his strength but his will power. He is also, as he says, "a free man," even while at work. After the work of the day is done, he certainly is free to till his little patch of ground, visit his traps set in the creek for crabs or his bush-trap set for dryland meat; to bathe, chop, dance or sleep; and in order to enjoy these privileges he goes at the work with his shoulder well up in the collar, doing the work not like the unthinking horse, but with intelligence and vim. The method is not free from its problems required to be understood and solved. Should the task prove to be lighter than the foreman estimated, the crafty ones on the team are too wise to finish the job too early, lest the foreman considerably

increase future tasks, so they dally and put in the time, only appearing at camp at a reasonable hour.

The Liberian laborers live on rice. This is boiled in large iron pots and served by pouring out into basins the size of a large wash-bowl. This rice is supplemented, when circumstances permit, with a mixture of palm oil, pep-

per pods pulled from the shrub, roots and succulent sprouts of various palms and bamboo plants, leaves of spicy and aromatic bushes, all crushed between two stones rubbed one upon the other, the whole served in another wash dish, in which are placed ready-cooked crabs, snails, small fish and any other meats, the result of their ingenious methods of catching these. The cook places the two bowls on the ground side by side, the men seat themselves within reach and each grabbing a handful of rice rolls it dexterously into a ball, dips it into the savory mixture, tosses it into a very wide open mouth and repeats the operation until both bowls are clean. Rice and salt, with a small sum of money to each on Saturday, called by the men "fish money" is the entire ration issued. The Gold Coast native does not eat





CROSS-CUTTING A MAHOGANY TREE,  
WEST AFRICA

rice when he can avoid doing so, preferring to live on the food products of his own country—maize, yams, plantains, bananas, palm nuts and palm oil, sugar cane, with all the native condiments above mentioned besides a host of others. To him no rations are issued, but a fixed sum in cash is paid to each man on the first of every month, with which he buys his own food supplies. Each little clique and clan does its own cooking, has its own pots and pans.

One of the first things to be done after a camp is opened is to clean the stream and put it into the best possible condition for floating and driving logs. In doing this work it is difficult to make the native workmen understand how thoroughly it should be done. A crew sent to cut out old logs, driftwood, fallen trees, and other obstructions from the bed of the creek, over a certain limit, will report on their return that the work is finished according to orders. On inspection these various obstacles will be found practically untouched, only such timbers cut out as might stop the logs on the very highest floods. Called to book, they say "Massa, God bring the big water; log he pass one time." These people rely for many things on the direct help of gods—not the God of the Bible, but their own several gods.

Lest it might prove dull reading, I refrain from narrating particulars of the general work, nor will I give details of the countless difficulties, seen and unforeseen, to be met and overcome; the untried creeks, the ignorant and unskilled labor, the disappointing qualifications and characteristic failings of the lumberjacks sent over to act as foremen and to educate the natives in the use and care of tools; the self-evident disadvantages of five thousand miles and four weeks' time from the base of supplies; the "white man's grave" reputation

of the West Coast as a deterrent to securing first-class men from the States to assist in the work; the abnormal and not-within-the-memory-of-the-oldest-inhabitant and therefore unexpected, floods in the dry season, or seasons' dry when by all precedents since the time of Noah, the floods are due; the entire lack of roads and ordinary means of transportation of camp supplies; besides the other thousand and



TYPICAL HOME OF WHITE LUMBERMAN IN MAHOGANY REGION  
OF WEST AFRICA

one matters constantly cropping up requiring an offhand decision by the General Manager—the healing of the sick, or, failing in that, the burial of the dead; correspondence with the home office, of the nature of ancient history—two months elapsing before the mail can possibly bring a reply; the unpleasant half hours wherein one feels that the determination not to turn one's back upon an undertaking but rather to stay with it until success has crowned the effort, is an exhibition of stubbornness and pride irreconcilable with the possession of common or even horse sense.

The duties of the manager, as will readily be seen, cover a wide and diversified field of action. He must be ready on his own initiative, as the referendum is two months away, forty days by post and cabling costs one dollar and a half per word each way. The redeeming feature of this self-imposed life in exile in West Africa is found in the multifarious duties here mentioned, and in the fact that one finds the time fully occupied, each day too short for the work; and the same is true of the weeks and months and years. Yet, to be entirely content, one needs a touch of Hearn or Stevenson in one's



blood or brain, with a dash of Crusoe, the unequalled in all emergencies. In mentioning the characteristic traits of the West African native, including Liberian and Gold Coast peoples, one feature stands out prominently to his credit, and by comparison uncomplimentary to civilized white man. In the performance of an important trust confided to him, he is absolutely reliable and beyond temptation to betray

confidence. In sending money to the camps to pay quarterly wages, the only means of carrying the cash is on the heads of carriers. The entire sum is in silver coin, British florins, shillings, six-pences and three-penny pieces. In this coin an equivalent of one thousand dollars weighs sixty pounds avoirdupois, a load for one carrier. The money is placed in canvas bags and carefully sealed with wax. To reach the farthest camp these men must walk five days through the forest, sleeping where they can, but usually at some native village. I have many times sent a single laborer with two hundred pounds, starting alone and unattended, to the farthest station and as high as six hundred pounds or three thousand dollars, by native laborers in charge of a native clerk to the different camps; and, doing this dozens of times, have never lost a penny through the default of these honest and illiterate heathen. The carrier's wage is twenty-five cents a day, with six cents for chop money, the clerk, in charge only because he can read and write and speak a little English, sign and receive receipts, drawing a salary of twenty dollars a month. The great continent of Africa spread out before them where to choose, the inbred characteristic herein mentioned becomes a valuable asset to his white employer.

The rainy seasons are best for hauling, the skids over which the flattened logs slide along the logging road are wet and slippery and this greatly facilitates the work. In a dry spell of weather the foreman resorts to the expedient of placing on the skids the juicy, succulent



BUNGALOW OF WEST AFRICAN MAHOGANY CAMP FOREMAN SHOWING PAW-PAW FRUIT AND LEOPARD SKINS

leaves of the plaintain, in size six to ten feet long and two to three feet wide, with a large stem full of sap. These placed in front of the log for it to slide over, are as good as twenty men added to the team.

Hauling after a time becomes monotonous, and an occasional day or two at floating logs away from the landing is welcomed by all the laborers who "savey swim." River driving is un-

der most conditions devoid of the elements of romance, at times full of danger, but seldom is carried on at night. No one inexperienced in driving logs can understand the disadvantages and awkward possibilities of night work. A shadow will deceive the most practiced eye, but will not serve the usefulness of a real log in supporting the luckless driver who leaps upon it in his work. In tropical Africa success in log driving is to be gained only by constant vigilance and being always ready to take advantage of the water the moment it rises. Without warning, a creek may fill with water to a floating stage, and in an hour or two the flood will have subsided, leaving the stream in its normal flow, and the log will never float "with the water that has passed."

On the larger streams, the mahogany trees have long since been cut; some of them in recent years have been made into logs and taken to market, but by far the greater number have been felled during the centuries that the continent has been inhabited. This has been done in clearing ground for villages and patches of land for planting crops; the process is still going on, though to less extent. These old clearings are now grown up to young forest, but the mahogany trees are missing. Hundreds of trees have been felled and never hauled, the native logger having exhausted his resources and so abandoned the tree to moulder and rot where it fell. This kind of waste is still going on, the ambition of the native to become a timber merchant being to his mind achieved when a few trees have been cut down, and in this condi-





COMING INTO THE BANKING GROUND WITH A MAHOGANY LOG IN TROPICAL WEST AFRICA

tion the logs are offered for sale, the only requisite before delivery being an advance of cash to pay labor. In most cases the advance is used for other purposes and the logs lie and rot, serving meanwhile as a bait for further advances from new purchasers. Along all floating rivers and creeks, thousands of the finest and most available mahoganys have been used in the making of canoes or dugouts, such as the natives use for river travel and transport. Other mediums of destruction have assisted in so stripping the forests of their mahogany trees that the logger is now obliged to utilize the smaller creeks and tributaries and even here, though in lesser degree, are found the same conditions.

On the small streams one must rely entirely on rainfall to drive logs to the main rivers. The more thorough the work of preparing the bed of the stream, the less water will be required, but at best the rains must fall. The heavy showers do not, as a rule, time their coming to suit the riverman. More often than otherwise, they begin to fall late in the day from four to six o'clock. The rain may fall in torrents for an hour or two and not perceptibly raise the creek at the place the water is needed, being a local shower not reaching any of the country the drainage of which feeds the upper tributaries. The rains that fall far up the creek and beyond the range of local observation are the ones to furnish the water to float the logs. Throughout the season a watch must be kept both night and day on the bank of the stream to notify the foreman of a raise of water, and, if in the night, he must rouse the men. It may be that all are asleep and the camp as quiet as the night is dark. Comes the watch-

man to the white man's bungalow with "Massa! Massa! Water he live for come!" "Go quick! ring bell!" is the order, and in a moment the camp bell is sounding its warning and the men are quickly astir and ready for the work in hand.

Without a path cut all along the bank and close to the edge it would be impossible to get near the creek or to the logs to work them, even in the day time. To ride the floating rear at the tail of the jam is to invite collision with the overhanging branches, vines and grasses with edges like saw teeth, only to be swept at last into the water. Under ordinary circumstances such an incident would be an occasion for jokes and merriment to the rivermen lucky enough to witness the chagrin of their fellow, but here, with the swift running current, the banks submerged and armed against approach by a network of repelling brambles too flimsy and slender to sustain the man who grasps them, and through which it would be torture to penetrate if that were possible, the situation of the driver is serious at best and in the night conditions are present which in the matter of safety to life and limb leave much to be desired.

Before the dry season ends, a quantity of dry bamboo has been gathered and stored under cover, split into narrow strips, tied into small bundles of suitable size for use as torches, to light as far as is possible the river drivers at their work. Lanterns are practically worthless, the light easily extinguished and failing in extremities and when life may depend upon a moment of light. There is no need ever to want for volunteers to carry these torches, as plenty of the bushmen "no savey swim,"



so they follow along the path and light up the water as well as is possible for the men at work on the logs. At the first alarm the foreman, taking with him a few men, has hurried down the stream to the head of the jam, where it lays as it was left on the sudden subsidence of a preceding flood; the remainder of the crew in charge of the headman or native sub-foreman, are placed at the several "bad places" in the creek and at the rear, and all in readiness for the waters to rise to log-floating stage. Torches are extinguished to save them for the time of action. The "rise," if it comes at all, may last for an hour, or possibly two, though rarely for five or six but, shorter or longer, there is no stopping of the work until the falling waters ground the logs on the

ress a drizzling rain is likely to be falling and soon the torch material becomes too damp to burn, though the natives are very expert at keeping these alight under trying conditions. When all have failed, the work must perforce come to a standstill and, unless the catastrophe has been anticipated in time, the crew may be left in places where they must wait for dawn of day or a rescue party from camp to relieve them from captivity.

It may be asked why obstacles are not removed before the work of driving begins. To this it may be said that everything is cut and cleared away as high from the bed of the creek as a man can reach with his machete, the work necessarily being done in the dry season, with little or no water running. The opening thus made through



WEST AFRICAN MAHOGANY LOGGING CAMP CREW WITH WHITE FOREMAN

bottom, there to remain in waiting for another rainfall. The torch bearer's job is no sinecure. Often he is up to his neck in water as the path crosses low places or the mouths of small rivulets up which the back water from the main stream sets far inland, and one hears the sizzle of a torch suddenly extinguished as its bearer loses his footing, it may be just when the non-swimmer is negotiating a pole, one that he himself had placed to serve as a bridge on just such an occasion as this one, but now two feet under water. Should he scramble out on the camp side of the bridge the chances are that he will make a sneak and disappear in the darkness, depending on the nature of the individual, or whether his boss is near enough to stop him. While the work is in prog-

the forest, like a log road or trail, resembles a tunnel with sides and roof of green. When the rains descend and the floods come, when no man can work at creek cleaning, the surface of the water on which the logs float may be eight, ten or even fifteen feet higher than when the dry season work of cleaning was done. The consequences may prove disastrous to the riverman as he passes through one of these submerged tunnels, its roof under water or so nearly so as to force the expert to take his punishment lying down, the tunnel dark enough by day and simply black at night, presenting a situation full of uncertainties, and perhaps as replete with dangers unknown, (always most trying to a man of courage), as the passage through the Colorado Canon, a feat not



lightly to be undertaken. In felling these big trees, the axmen do not stand on the ground nor lay the ax at the root of the tree. The first thing to be done is to cut four light poles and set them up for support of a scaffold made of four horizontal sticks lashed at the required height to the uprights, with more sticks laid across. On this precarious footing the axmen stand and chop all around the tree, which at last falls as it will, selecting its own bed ground, the natives climbing down and slipping away to safe quarters.

In cross-cutting, a ladder must be set up for the sawyers to stand on in starting the cut. Cross-cutting of big timber takes a lot of knowing how, else it is

of bushmen taught the fine points of intelligent labor; how to prepare and lay the foundations for successful results; to rely on their own efforts rather than upon unusual and occasional manifestations of nature or, to use a favorite expression, "by God's power;" in short, to put them in the way of earning real money with which to buy the things they are at the same time "learning to want" a long step toward becoming "civilized." These items of progress may not entitle the claimant to any of the medals or prizes, rewards for meritorious deeds, yet it all seems like having done a vast amount of good to a large number of heathen, paying each individual wages with board and lodging, for the privilege of educating



#### THE MILL CAN NEVER GRIND WITH THE WATER THAT HAS PASSED

Unless the logs are ready for floating when the small streams rise suddenly it may be a long time before there is enough water to carry them out, so night and day the camp foreman must be ready to rush his crew to the stream when water comes.

backbreaking work. The native is slow in getting into the right swing, is inclined to ride the saw, pull at an angle, push so as to buckle and bind, can not file or set so as to run free, does not properly block to prevent top binding, nor support the nearly severed log to prevent splitting, and it becomes necessary to instruct him on all these points. The same is true of the use of all logging tools and of the devices for taking advantage of the work in all its branches, and I am strongly impressed with the thought that from my endeavors along this line and the results accomplished by my coadjutors, I may rightfully lay claim to favorable recognition as having done real missionary work. Several thousands

him in a real, practical industrial school than which nothing will better serve to civilize or modernize the West African. If this educational work has been supplemented by examples of clean and decent living, the care of the sick and wounded, burial of the dead; prompt payment of obligations; patience with the ignorant and stupid; justice and kindly treatment for all, then it can not successfully be denied that some fairly good missionary labor has here been accomplished.

Quite naturally the question arises—why continue in the twentieth century to haul logs with man power? Since neither horses, mules nor oxen can be used, why not try the various kinds of steam power; cable ways,



skidders, yarding engines, pole roads; tramways, railways, slides and other devices known to the logging fraternity?

Let us take it for granted that this matter has been given merited investigation and the use of the known methods found unsuited and not adaptable to the conditions. If there were real forests of mahogany, or if the trees could be found in groups or in ridges or in numbers in any locality, as is the case with the timber in temperate zones, modern, up-to-date methods might be used in logging. Of the mahogany tree, it may be said that it is "lost in an impenetrable forest."

Surrounded by hundreds of trees of different kinds

culty in landing from the steamer, and the almost impossible fact of moving it to the work, all this and many other expenses incident to the environment, make the man power most economical. Logs to be hauled, whether flattened on one side or squared, are leveled or rounded at the end in form like a sled runner, to slide more easily over the round skids laid across the road and four to six feet apart.

The hauling line is a one and one-quarter inch rope, attached to the log as shown in the photograph "taken by our own artist on the spot."

Determined to make some advancement over the methods in vogue when David was gathering material for the



MAHOGANY LOGS SQUARED FOR THE ENGLISH AND CONTINENTAL MARKETS

The work of getting out the heavy timber from the wood to the seacoast and the steamer has to be done by man and animal power owing to the nature of the country and the distance from European or American sources of supply.

and of all sizes, these magnificent monarchs of the woods stand apart from other members of the family and seldom more than three or four trees near together, and more often standing alone with no other mahogany tree in sight. In fact, the trees to be felled are so scattering that roads must be built to each one, and so few in number that the cost of setting up logging machinery and moving it as the timber supply within its reach was exhausted, would deliver it to the banking ground by the primitive method, then the cost of the machinery, diffi-

building erected later by Solomon, the writer decided on experimenting with the caterpillar which lays its own track, as it crawls along over softish ground and minor obstacles. Had just succeeded in getting everything in shape for a thorough working tryout, when "grimvisaged war upreared his wrinkled front." Native labor became an uncertain quantity; cargo steamers were commandeered, the caterpillar ceased crawling, and this method of logging in tropical West Africa is still in the experimental stage.



# THE MAGIC CUP

By Arthur Newton Pack

European Commissioner of the American Forestry Association

THE legends of almost every race and people are full of references to a magic cup which refilled itself as fast as it was emptied. It was a charming idea, none the less attractive in these present days of prohibition, and while science has as yet found no way to fulfill this particular dream, in other fields at least there has been a pretty close attainment of the ideal. At the gates of nearly every city and town of Continental Europe lie countless pleasant looking woodlands which from year to

with lumbering or forestry about them."

Nevertheless, it is forestry, as developed by a nation with two hundred years of practical experience, that permanently maintains those very woods my friend saw, and for no other reason than that the profit derived therefrom pays all the costs and carrying charges. It is as much a misconception to interpret forestry solely as the science of setting out regular rows of little tree seedlings as to consider the forester merely as a student of tree



OLD STUMPS AND NEW TREES

If we can only make every man, woman and child appreciate the danger of fire and eliminate it to the degree that European nations have done, we will soon find ourselves well on the road to realize the perpetual forest dream.

year appear but little changed, yet forming a permanent source of supply for regular assured quantities of fuel and lumber free of freight charges.

The trouble is that most of those who travel abroad see only the forests and miss the magic of it entirely.

"Yes," said a friend of mine the other day, "I remember seeing some very beautiful woods near Paris, but I don't suppose they interested you, as they all looked naturally grown and I suppose there was nothing to do

diseases and Latin names. Forestry concerns itself with every phase of forest propagation and use, just as farming with the annual crops of the field and garden.

The story of the town, city or state owned forests of Europe is not new to many of us. Although the excessive advertising given to a few such plans in Germany and Switzerland tends to obscure the general character of the development, the movement in all probability originated in France, and has there for more than a cen-





THE FOREST AT OUR DOOR

At the gates of nearly every city and town of Continental Europe lie countless pleasant looking woodlands which form a permanent source of supply for regular assured quantities of fuel and lumber free of transportation charges.

tury been widespread. The known vagaries of political administrations may cast some doubt upon the reports of tremendous success and generous profits, but when we find a private corporation owning a forest and perpetually maintaining it at a comfortable profit, as is also the case both in France and a section of the Black Forest of Germany, we must recognize that the matter is worth investigating. I confess that I have never visited one of these propositions without thinking of our own clubs and private preserves, of the Adirondacks, the Catskills, and the White Mountains, and the great potential wealth that will some day be developed by their owners.

That here in America we have plenty of land and to a small degree still a few low grade trees near our great wood-consuming centers, it is evident to the casual traveller, and the fact is being better emphasized every year through the reports being prepared by the newly constituted forest commissions of our states. But somehow the magic formulas transplanted from Europe fail to work out in American dollars. In the first place the maintenance of a perpetual forest involves quite different logging methods than are common in the United States. Instead of the easy, machine-like cutting of an entire

area, the lumberman must only cut scattered trees, so selected as to best encourage natural growth, the volume of timber cut being dependent upon the volume annually added by Nature to the wood content of the forest. Obviously the greater amount of ground to be covered largely increases the cost of operation; but where the forest is located near the market for its products this charge is readily absorbed by the saving of transportation costs. When we consider that 60 per cent of the present price of lumber in our eastern states represents what we pay the railroads for bringing it from the Pacific Coast, this is not hard to understand. The added cost of logging by the new method is not the real stumbling block; it is the lack of forests near our chief markets for wood products. We have destroyed beyond possibility of valuable reproduction by natural methods practically all the forests in the eastern part of our country, and are forced to start again from the very beginning and create them artificially. It is not the failure of the formula, but the first cost of the Cup which staggers.

All of Europe once pursued the same destructive policy and faced the same problem. France, devastated by the German army, is facing it again today. How is it that Continental European nations cango through all the labor of planting trees and the years of waiting thereafter and still find the operation profitable? Simply because the people are obliged to foot the bill or have no lumber,



WE MAY COME TO THIS

This woodland of beech outside a great European city furnishes both a recreation ground for the people and a permanent supply of lumber and wood.



we are told. Yet, when we come to investigate we find that ordinary lumber prices in Europe are not a great deal higher than those which we have had to pay from time to time. No, there is another factor which enters in, and that factor is coal. Forestry had its beginnings in Europe not in a demand for lumber but in a demand for fuel wood for heating buildings where men lived. The traveller in Europe seldom finds central heating and coal furnaces unless it be in the larger and more modern cities. Europe has not the coal to do it. The old-fashioned air-tight wood stove is everywhere and not coal but wood is king.

What does this mean to growing forests? Simply that the tops, branches, and even the twigs, for all of which we have little use, bring high prices as fuel, and it is their utilization which returns the extra cost of planting. When a town or private owner plants out the land a great many more seedlings must be used than are eventually desired as mature trees; first, because many will die of their own accord; and second, because unless trees are planted very close together during the first few years they become squat, limby, and of less value. In Continental Europe the removal and sale of the weakling trees and of the necessary thinnings for the health of the forest will often, after fifteen years, pay back the entire original investment, and there is no interest to accumulate and compound. In America we can get practically no return until a cycle of forty or sixty years at least is run.

In England, people burn coal not only in the factories and furnaces, but in their open fireplaces, a habit of many, many years. Yet there, too, they are planting out new forests and expect that the investment will pay; and it will pay, not perhaps so well as some other high yield investments, but because England must have the wood for lumber and realizes that the foreign sources upon which she was accustomed to draw are running dry. Al-

though she cannot get the same high returns from fuel wood and early thinnings as in France and Germany, she does believe that by the time these new forests do come into real production, half a century from now, the people would rather foot the bill than go without lumber. The British government is doing everything it can to make that bill as small as possible. The obstacles of habit in wood utilization are squarely faced, and endeavor is being made to meet the competition of coal and introduce a more complete utilization of wood than has as yet been known.

Here is a plan which we can well consider. Many

of its phases have already been incorporated into Federal and State forest laws of the United States, but we are still behind all of Europe in appreciating the growing necessity for really active measures of forest development. As has been shown in previous numbers of the American Forestry Magazine, the experience of a number of our private lumbering corporations in the east and south demonstrates how a closer utilization of forest products and a more careful system of cutting to encourage natural reproduction is already justified in the terms of profits. Now we see that, in appreciation of the changing attitude of our wood using industries, a few of our towns, particularly in New York state, are taking the risk in planting municipal forests, and who can doubt that their foresight will be justified with generous returns. The destruction by fire of mature forests



IN A MUNICIPAL FOREST

The municipal forest movement in all probability originated in France. This beautiful forest of spruce, owned by the French government, yields from its annual growth a generous supply of timber for the surrounding neighborhood, pulpwood for paper manufacturing, and bark for the tanneries. Under a careful system of selective cutting, it continually reproduces itself.

and areas of second growth remains our most serious problem. If we can only make every man, woman and child appreciate the danger of fire and eliminate it to the degree that European nations have done, we will soon find ourselves well on the road to realize that perpetual forest dream, and insure for all time a steady and constant supply of the wood and paper upon which we all depend.



# THE SYCAMORES

By Joseph S. Illick

ALL sycamore trees belong to the plane tree family. Only six different kinds are known in the world. Three of them occur in southern Europe and Asia. The other three are native to the United States. All of them attain tree size and belong to the group of trees known by the scientific name *Platanus*, which means "broad", and refer to the width of the leaves. The leaf-blades of sycamore trees are not so broad as those of some tropical trees but they are among the broadest found in temperate regions.

The three sycamores that inhabit the United States and the adjoining part of Mexico are the common sycamores, native to the eastern half of the United States; the California sycamore, found only on the Pacific Coast; and the Southwestern sycamore, native to New Mexico and Arizona, and extending westward towards California.

In addition to the native sycamores, another member of the family, native to southern Europe and western Asia, has been introduced extensively into the eastern part of the United States. This tree is really a sycamore, but it is often called oriental plane tree, or just plane tree. It has many good points and is being planted extensively as a street tree, and locally it is looked upon with favor for general ornamental planting. In the city

of Washington and in Philadelphia, many specimens have been planted and are now growing well. A few years ago a census was taken of all the street trees in Paris, and out of a total of 86,000 specimens, 26,000 were oriental sycamore. This favorite tree has many desirable characteristics. It grows rapidly, is hardy, and possesses a beautiful crown, gives ample shade, has an attractive bark, and only a few insects and fungi trouble it. It stands in the front rank among our shade and street trees, and in spite of its foreign origin has won a worthy place among ornamental trees.

The California sycamore is also known as buttonwood and buttonball. Its scientific name is *Platanus racemosa*. It is a small to medium-sized tree ranging in height from 40 to 60 feet, and occasional specimens exceed 24 inches in diameter. The trunk is usually short, and often branches near the ground. The branches, like that of all other sycamores, are conspicuously irregular and massive. Its occurrence is usually confined to bottomlands where one finds it near the border of streams. Among its associates are the white alder, black-leaved maple, California walnut, and occasionally willows are found standing by its side.

The Southwestern sycamore usually goes by the unmodified name sycamore, but occasionally it is called



LEAVES OF THE ORIENTAL SYCAMORE (LEFT) AND OUR NATIVE EASTERN SYCAMORE (RIGHT)

The scientific name *Platanus* means broad and has reference to the width of the leaves of the Sycamore, which are among the broadest found in our native trees.





### THE UNUSUAL BARK

The bark of the Sycamore resembles a patchwork of white, green, brown and yellow. No other native tree has a similar bark.

buttonwood, and sometimes it is given the name button-ball. Its scientific name is *Platanus Wrightii*. It seems proper to call it the Southwestern sycamore for it is native only to the southwestern part of the United States, being found chiefly in New Mexico, Arizona, and extending westward towards California. It attains a height of 80 feet, and usually divides into several stout stems near the ground. Its leaves are quite large, heart-shaped at the base, and from 3 to 7-lobed. This tree is of little commercial importance because of the limited amount of wood that it yields, but it is one of considerable economic importance since it grows chiefly on the banks of streams and bordering bottomlands, and thus prevents the washing away of stream banks, and makes productive vast areas of wasteland that would otherwise remain idle.

The common sycamore of the eastern United States is the largest deciduous tree found in the entire country. In some localities it is called buttonwood, in other regions it is given the name of buttonball, and occasionally one may hear the name plane tree given to it. Its scientific name is *Platanus occidentalis*. The name means "plane tree of the west", and was given to it as a mark of distinction from the oriental plane tree, the scientific name of which is *Platanus orientalis*.

Only two of the six sycamore trees found in the world may be classed as important forest trees. They are the oriental sycamore and our native sycamore of the eastern United States. Scientists tell us that the sycamores are of ancient origin, and that at one time they were far more abundant than now. It is their belief that at one time they were quite common in Greenland and in the arctic regions, and that they also existed in middle Europe, where now no trace of them remains. It is also

thought that several additional species occurred in the central part of the United States in early geological ages. Some of the ancient sycamores have unquestionably become extinct, but we should be grateful that there remain such magnificent trees as our common sycamores found in practically every part of the eastern United States, and the oriental sycamore which has no superior as a street tree.

Our native sycamore of the east is found from Maine and Ontario to Nebraska and south to the gulf states and west to Texas. It stands out unique among our forest trees, in that it casts its bark as well as its leaves. All trees do this to a greater or less degree, for it is a necessity of life that the bark yield to the pressure of the growing stem on the inside. As the outer layers of the bark die, they split into scales or crack into plates of varying form and thickness, and finally fall off. In the case of the shagbark hickory, silver maple, and ironwood, this process is not hidden, but the sycamore is



### BOTANICAL CHARACTERS OF BUTTONWOOD

1. A flowering branch.
2. A head of flowers with most of the flowers removed.
3. A staminate flower, enlarged.
4. A pistillate flower, enlarged.
5. A fruiting branch with mature leaves.
6. An achene, enlarged.
7. A winter twig with two heads of fruit.
8. Section of a twig showing a subpetiolar bud.
9. Section of a twig showing a stipule, natural size.
10. Section of a winter twig, enlarged.



even more open in proclaiming this fact than any other forest tree.

The most striking distinguishing characteristic of our common sycamore is its thin, smooth, whitish or pale green bark on young trunks, which resembles a crazy patchwork of white, green, yellow, and brown. In winter white is the predominant color, while in summer there is a tendency towards green and brown. In summer the bark is not so conspicuous, because the white color of winter seems to be replaced by a greenish to brown color, and then, too, the bark is hidden by the heavy leaf-canopy that is usually present upon the trees.

The leaves are simple, usually heart-shaped at the base, and wavy on the margin. They are from 3 to 7-lobed, and hairy or wooly on the lower surface. The most distinctive feature of the leaf is the enlarged or swollen base of the leaf-stalk. In late summer, just before the leaves begin to fall, one of the delights of the country boy is to ask his playmates to find buds of the sycamore tree. They all walk together to a nearby stream, and then begin to examine the twigs for buds. After a short examination of the twigs, they conclude that nature has made no provisions for next year's growth, and no buds are to be found. A little bit of patience, and somewhat closer examination of the twigs, will reveal, however,



A PLANTED SYCAMORE

It was raised from seed and is making an annual height growth of almost three feet.



AN UNFAILING DISTINGUISHING CHARACTERISTIC

The bud of the Sycamore is hidden under the swollen base of the leaf-stalk. The twigs are hairy and surrounded by the large leaf-appendages.

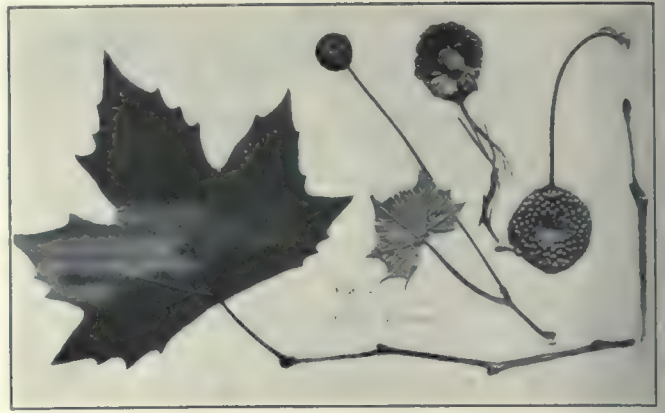
that the sycamore does have buds, but that they are hidden completely under the enlarged stalks of the leaves. It seems as if nature has provided a protective cover for the tender buds until they are fit to withstand the cold of late autumn and early winter. As soon as the buds have hardened up, the leaves fall off, for the buds are then ready to be exposed to the cold. Because of this unusual condition, the bud of the sycamore is often described as *sub-petiolar* bud, which word means "under the petiole". The word "petiole" is nothing more than another name for leaf-stalk. It follows, therefore, that the term *sub-petiolar* bud means "buds that occur under the leaf-stalk". If one will keep in mind this unusual characteristic, it will be possible to identify the sycamore very easily during autumn and the winter months.

Another striking characteristic is the fruit. It occurs in small balls suspended on slender stalks. The balls of fruit are about one inch in diameter and are composed of slender seed-like bodies, densely packed together in a spherical mass. One ball contains thousands of seeds which are made up in a unique way and are well adapted to be scattered about by the wind. One end of each seed is attached to a central marble-like body, from which



all the seeds radiate and upon which they are packed tightly side by side. A circle of fine, tawny, stiff hairs is attached to the base of each seed. These balls of button-like heads of seeds ripen in late autumn and usually remain attached to the branches far into the winter, and some of them may hang on to spring. During late winter and early spring these balls break up and the hairy seeds are scattered widely over the forest floor where they germinate as soon as warm weather is at hand. The seeds are distributed after the manner of the dandelion seed, with which they have many points in common.

In winter the smooth, reddish-brown, pointed buds are a sure means of identification. They are completely surrounded by a leaf-scar and covered with a single



#### UNMISTAKABLE IDENTIFYING CHARACTERS

The fruit, flowers and leaves of the Sycamore are all distinctive.

tured, which accounts for the fact that it is used extensively in the manufacture of novelties and kitchen utensils. If one examines the many household articles offered for sale in a 5 and 10 cent store, it will be found that many of them are made of sycamore wood. Brush backs, mouse traps, kitchen utensils, building blocks are among the many articles made of it.

Sycamore wood is not durable, and consequently it is rarely used where it comes in contact with the soil. The average life of untreated lumber in exposed situations is usually placed at from three to five years. The life of individual boards or planks, however, may vary from this figure depending upon the quality of the wood and the condition in which they are placed.



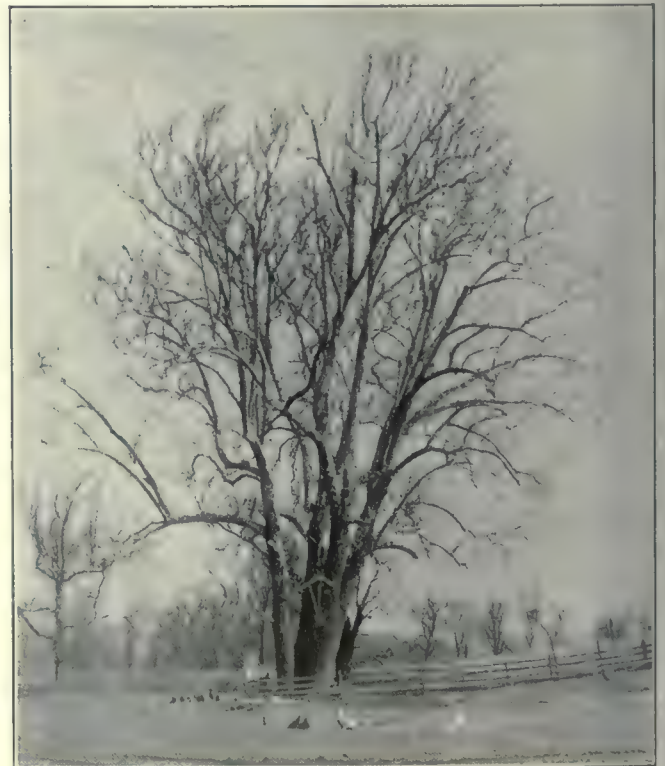
A ONE-YEAR-OLD SYCAMORE SEEDLING

It is almost three feet high and developed on a pile of sand.

bud-scale. If one takes a good look at the bud of the sycamore, it will be easy to recognize it any time during the winter months. The winter buds and the leaf-scars are so distinctive and such positive characteristics that one cannot confuse this tree with any of its associates.

The occurrence of the sycamore is also helpful in distinguishing it, for usually one finds it along the banks of streams, the border of ponds, or other wet places. In winter one often sees long wavy lines of sycamore trees which mark the course of a stream. They stand out conspicuously among all other trees because of their white bark and their distinctive crown forms.

The wood of the sycamore tree is uniformly pale brown, sometimes tinged with red. It is a clean-looking wood and presents a good appearance when manufac-



FOUR MASSIVE SYCAMORES

Many years ago a Sycamore Ball composed of many hundred seeds may have been dropped on the spot where these four massive trees now stand.



One of the most desirable characteristics of sycamore wood is the fact that it neither stains nor imparts odor or taste to substances that come into contact with it. This quality, together with its neat appearance, makes it particularly suitable for use in the manufacture of containers.

While sycamore is not one of the principal lumber woods of the country, yet fully a thousand sawmills are annually working it up for the market. In the state of Indiana alone 150 mills report the use of sycamore; and in Ohio at least 100 sawmills are working it up into lumber.

The latest statistics show that more than 35,000,000 board feet are cut annually. About one-half of the total cut is used in the manufacture of boxes and crates. The next largest use is for slack cooperage. It has long been the favorite wood for boxes for plug tobacco, which is easily stained and acquires an unpleasant taste and odor from most other woods.

The principal supply of sycamore lumber comes from the region lying between West Virginia and Missouri and the states of Wisconsin and Tennessee. The greatest supply is located along the river bottoms of the Ohio and Mississippi Valleys and along the main tributary to these rivers.

Just how much sycamore lumber remains in this country is difficult to estimate. It is evident, however, that there is less now than formerly, for it is a bottomland tree and originally occurred in the fertile valleys which have been cleared for agriculture. It seems, however, as if a future supply is assured, for there remain vast areas



THE DAUPHIN COUNTY SYCAMORE

With more than 25 feet in circumference at the base, and a branch spread of over 100 feet, it stands near the burial place of John Goodway—the last of the friendly Indians of Central Pennsylvania.

of low-lying wet bottomland bordering the many streams of the eastern states which are adapted to little else than the production of a forest crop. It is upon these areas that the sycamore tree will continue to flourish and maintain itself.

Our native sycamore has many good points, but unfortunately it has a serious enemy in a fungus disease that seems to come around annually, shortly after the leaves have started to develop. When the leaves are about one-third grown, there begin to appear upon them little brownish to black dots near the veins. These dots enlarge rapidly, and sometimes within a few days, and frequently within a week the leaves have completely browned up, shriveled, and begun falling to the ground. The leaves appear as if they had been injured by the frost, but the temperature records of the localities show conclusively that no frosts occurred in the regions. A close examination of the injured leaves shows that the damage was due to a fungus which develops rapidly and does an enormous amount of damage annually. The damage is so great, and the trees are left in such an unsightly condition, that it practically eliminates our native sycamore tree from street and ornamental planting.

We are just beginning to know the real merits of our native sycamore. Not more than a mere start has been made in the use of its wood. With a serious timber shortage now confronting us; it is becoming necessary to use more ordinary woods. It seems fair to predict that before long the wood of the sycamore will play a more important role in the lumber industry of America than it has in the past, and with a better understanding of the good qualities of its wood, the practice of forestry



BERKS COUNTY CONSERVATIONISTS

Leading men of Berks County at the foot of the Champion Berks County Sycamore. (Courtesy of Reading Eagle.)



will include this tree among those worthy to be protected and handled with care. When we really learn to know the sycamore better and understand its forest habits, and are familiar with its growth, we will be glad to give it a place in the forest management of the hardwood forests of the East.

A few years ago the American Genetic Association started a survey of the big trees of the United States by offering a prize to the person reporting the largest trees by groups found within the country. This brought to light many large trees, and among them a massive sycamore at Worthington, Indiana. In 1915 this giant of all our American hardwoods measured 42 feet and 3 inches in circumference at five feet above the ground, and was almost 150 feet tall. It is not unlike other large sycamore trees in that it branches near the ground. Its east branch is 27 feet and 3 inches in circumference, and its west branch, 23 feet and 2 inches in circumference.

Throughout the Mississippi Valley and its principal tributaries, the sycamore grows at its best, but it also attains a large size in some of the river valleys of our eastern states. The "Dauphin Sycamore" standing near Linglestown, Dauphin County, Pennsylvania, is one of the best specimens in the eastern states. It has a circumference of more than 25 feet at the base, and a branch spread of over 100 feet. Most of the older sycamores that stand in our country are hollow, but the Dauphin sycamore shows no traces of any damage or decay. It is one of the best preserved large trees of its kind. Local historians tell us that this tree stands as a memorial to John Goodway, the last of the friendly Indians that lived in central Pennsylvania. It is said that he is buried in an unmarked grave about 100 yards north of this magnificent and massive tree.

Among the historic trees of Pennsylvania is a sycamore growing near Chadd's Ford in Delaware County. It stands close by the house used by Lafayette as his headquarters before the battle of Brandywine, September 11,

1777. This tree is about seven feet in diameter, well-proportioned, and remains as a living and worthy memorial to the great general. Local historians claim that Lafayette was laid under this tree after being wounded in the battle. The words of the historian and the truth of the tradition may be questioned, but the great age and large dimensions of the tree cannot be challenged.

In 1921 the Conservation Association of Berks County, Pennsylvania, offered two prizes in a big tree contest. One prize was offered to the school and the other to the pupil discovering and reporting the biggest tree in Berks County. From every part of the county came measurements of many big trees. When all the results were tabulated the prize was awarded to a big sycamore. The tree that helped win the prize was thirty-seven feet and one inch in circumference near the ground, 103 feet high, and had a spread of branches of 100 feet. This tree now holds the honor of being the biggest tree of Berks County, Pennsylvania. It stands in a field on the old Rothermel farm, one-half mile north of the Half-way House, in Maiden Creek Township. Since the prize was awarded, many pilgrimages have been made to this magnificent specimen of tree growth.

It will not be long until our native trees will play a prominent role in the educational work of our rural schools. As soon as we learn to know our native trees better, writers of geography will no longer picture and describe only the big trees of California and the high Eucalyptus trees of Australia, but will also tell the school children about some of our native trees and other nearby natural wonders. When we learn to know more intimately the things that stand about us, there will accumulate a body of valuable local history that will make each succeeding generation better informed and more satisfied. The attractions of the city have been heralded widely, but the beauties and wonders of rural life have remained unsung. Let us teach the country boy about the wonderful and useful things that surround him and the march toward the city will take care of itself.

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## THE CALL OF THE WHITE PINES

Lying beside the highway strife,  
Hurrying by with busy life  
The white pines—silvery green and gray—  
Beckon our spirits and seem to say:—

"Leave your restless thoughts, forget  
The daily worries that gall and fret;  
Come hither and seek a quieter mood  
In our sunny, restful solitude".

The fragrance of the monarchs strong,  
The carefree notes of the chickadee's song,  
And the whispering voices above us, all  
Persuade us to answer the pine wood's call:—

"Leave your restless thoughts, forget  
The daily worries that gall and fret;  
Come hither and seek a quieter mood  
In our sunny, restful solitude."

—ELEANOR FRANCES FULLERTON.



# WOOD FOR PROFESSIONAL AND SCIENTIFIC INSTRUMENTS

By Hu Maxwell

THE makers of professional and scientific instruments in the United States use thirty-five million feet of wood a year, and of thirty-four kinds, ranging in quantity from twenty million feet for the largest down to a few feet only for those in least demand. Native and foreign woods are on the list, but in both number of kinds and in amount the native species greatly exceed those brought from foreign countries.

Many articles are included in this industry, but they may be segregated in a few classes. Of all the instruments belonging in the professional or scientific class, the most important is the lead pencil. It is a simple and small article, but it is clearly in the professional class. Two materials, sometimes three, form its constituent parts, namely, wood, graphite and sometimes rubber. In bulk it is chiefly wood, but the substance to which it owes its name is graphite, a mineral which forms the writing or marking portion of the pencil. The rubber constitutes the eraser, if

the pencil has one. Traced to the final source, all three of these substances are wood, though that claim may appear far-fetched. The rubber comes from the rubber

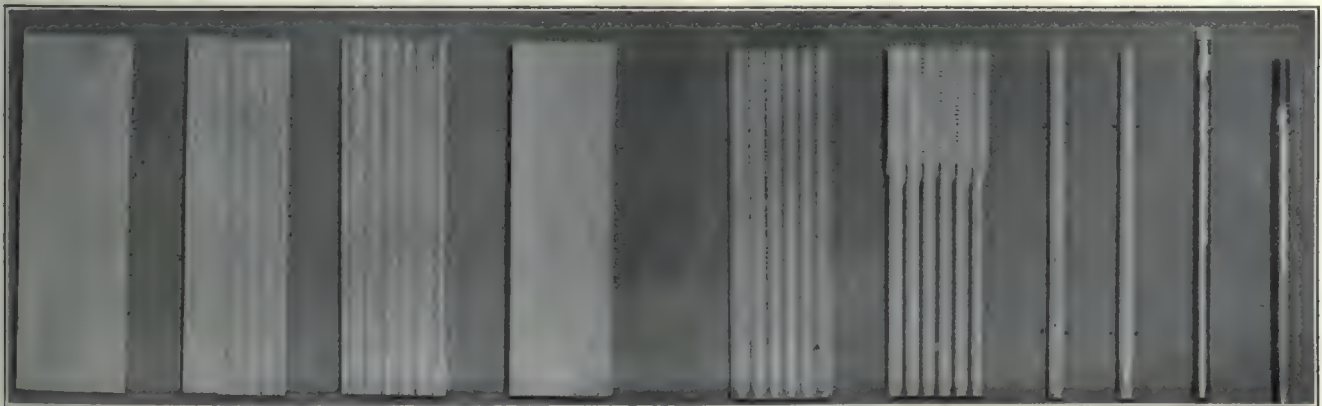
tree; the graphite comes from a mine, if not artificial graphite, and it is believed to have once been coal, derived from wood. Immense time, enormous pressure, and a certain amount of heat, were perhaps among the agents of change which transformed wood into graphite and prepared it for the pencil maker. But in the present article it is not the purpose to go farther back than the wooden slat in dealing with the origin or manufacture of the lead pencil, leaving questions of geology and chemistry out of consideration because they are not strictly to the point.

Most lead pencils are of cedar, and by common consent the best wood for this article is the common southern red cedar, known botanically as *Juniperus virginiana*. The tree is an evergreen and is found growing naturally from New England to Florida, extending in the southern



SOURCE OF THE RAW MATERIAL

The makers of professional and scientific instruments bring woods together from the remote corners of the world, but the accompanying picture represents a typical scene in a northern forest in winter where some of the choicest woods are obtained.



PROCESSES IN LEAD PENCIL MAKING

The pencil slats which will make from three to six pencils each are passed through various machines before the finished article is ready for market. The steps are shown in the accompanying picture. (Photograph by courtesy of the New York State College of Forestry, Syracuse, New York.)





### GREAT IS THE LEAD PENCIL

Though the lead pencil is among the smallest of the implements in the professional and scientific class, its manufacture calls for more wood than any other single article in that class; in fact, more than all others combined. Most pencil wood is red cedar, but some other woods are used.

states as far west as Texas in great abundance. Farther north it occurs as far west as Kansas and Nebraska, and northward to Dakota. The tree is found in more than half of the area of the United States; and if some closely related species are included, it is found in practically the whole country. But pencils are made only of trees which grow in the southern states, for the wood of the same tree growing farther north or west is not regarded suitable for pencils. It is too hard, or in some other particular the manufacturers find it objectionable. Therefore, the best cedar for pencils is restricted to regions somewhat limited, although woods other than this cedar are put to some use in many regions and countries, though not one of them is regarded as a rival of this cedar.

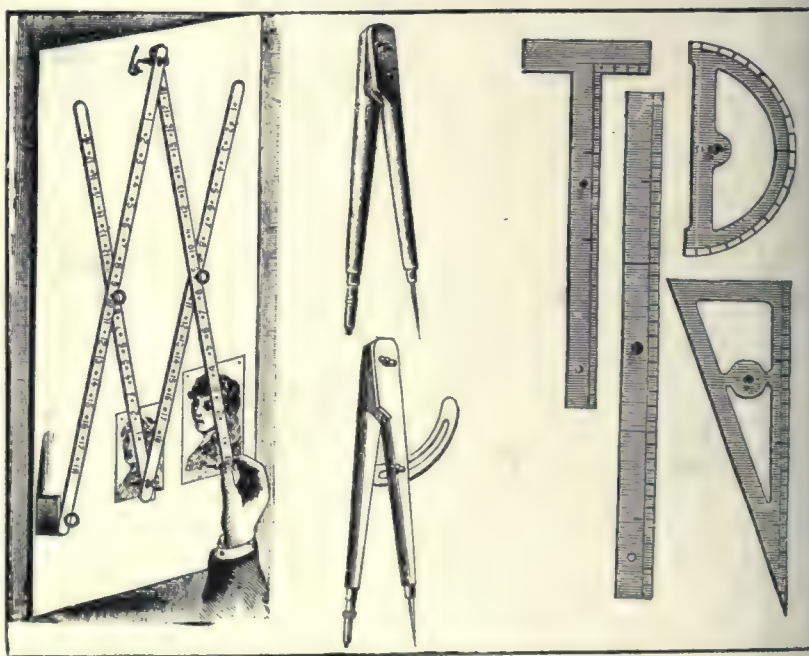
Heartwood is liked best, and first-class heartwood is apt to be found in cedars of large size. It must be of good color and of soft texture, free from flinty streaks. Cheap pencils may be made of inferior wood, or of softwood dyed to imitate heart; but the best pencils are of heartwood. The demands of custom and fashion are somewhat exacting. The most insistent demand of custom is that the wood of a good pencil shall have a delicate cedar odor. The writing qualities of the pencil are not improved or lessened by the odor or lack of odor of the pencil wood; nevertheless, custom insists that the odor must be present. Many persons associate odor with fine quality in a pencil. If the odor is lacking or if it is unsatisfactory, they conclude that the pencil's quality is lacking. Purchasers often

smell a pencil before buying, and if they are not satisfied with the odor, they refuse to buy that particular pencil.

It is thus apparent that wood's smell has much to do with the sale of any particular brand of lead pencil, and the manufacturer takes that fact into consideration. It so happens that the odor of southern red cedar is strong and characteristic, and it has influenced the popularity of that wood as pencil stock. It has desirable qualities other than its odor. Its color has already been mentioned, but that quality should be further emphasized. A pencil of pale, nearly colorless wood is not liked, though such a pencil might write as well as any other. It looks cheap and many persons judge pencils by their appearance.

Cedar's light weight is a quality appreciated by manufacturers of pencils. Wholesale shipping is done in large quantities, and the shipment pays freight in accordance with its weight. The weight of a thousand gross of pencils of cedar is much less than it would be if the shipment were made up of pencils of some heavy wood. It is, therefore, proper to regard light weight in pencil wood as a property calculated to enhance its value.

Still another quality is insisted upon by most pencil users whose tastes and prejudices have been developed. They want a pencil that whittles nicely and easily. That seems like a trifling consideration, but it has its weight in determining what woods make the best pencils. Of course, the wood must be soft if it is to cut easily. Further than that, it must cut without a gritty sensation. The wood must crumble away from the knife blade while the pencil is in the process of being sharpened. Tough shavings which curl and roll like sliced horn condemn a pencil in popular opinion. Persons who are particular



### DRAWING INSTRUMENTS

Drawing tools and instruments call for fine woods, some of foreign origin, other native of this country. Boxwood, mahogany and ebony are the chief imported woods, while our own forests furnish cherry, walnut, maple, beech and poplar. Some instruments of this kind are wholly of wood, others only in part.



in their choice of something to whittle, are not unreasonable in this demand for a soft, brittle wood. Most men enjoy whittling, and if the pencil does not cut in a pleasing manner, they feel that a cheap, inferior article has been foisted on them, and when they buy another pencil, they will choose another brand. When they finally try out a make that cuts smoothly, has a pleasing smell and a good color, they buy that brand in the future. Pencil makers are aware how much their sales depend on fad, fashion and prejudice, and they study the art of pleasing. At the same time cheap and inferior pencils are thrown on the market to be bought by Tom, Dick and Harry, who have no taste and little discrimination and will buy any sort of pencil that makes a mark.

Pencils have been made without wood. The rod of graphite is encased in paper. The claim is made and is duly advertised that such pencils can be sharpened without the use of a knife or other machine, by simply unwrapping some of the paper. Perhaps the fact is not so extensively advertised as it once was because it has been ascertained that people do not as a general thing object to whittling a pencil when they want a point on it. If the rod of graphite in a paper pencil is of good quality, the pencil should write as well as one with wooden stock; yet any one who will observe the pencil user in business will quickly see that the paper article which needs no whittling, and has no odor or color, is not very popular.

The fact that wood has so much to do with the success and popularity of a lead pencil, makes it easy to understand why the search for suitable stock has been so thorough. By pretty general consent, the best pencil cedar is admitted to grow in certain regions only, say from Virginia southward. That does not imply that some good cedar does not grow elsewhere, but the largest supply of the best comes from very limited regions, particularly from Tennessee. Information long ago became public that pencil makers



THE SOUTHERN PENCIL CEDAR

Here is shown a fully matured red cedar from North Carolina, the kind of which lead pencils are made. Few of the pencil cedars of that size and age remain standing, though they were once abundant.

were buying old fences of cedar rails, barns, cabins, bridges, cribs and other old cedar structures in Tennessee, as well as such standing timber as was to be had.

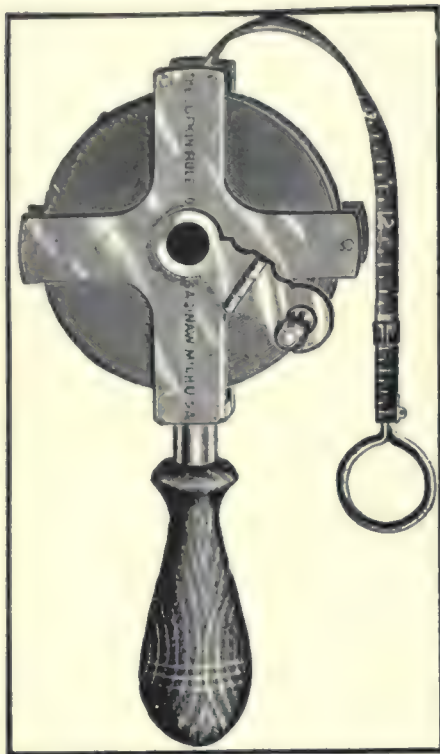
The soil and climate of Tennessee happen to be just right to produce large cedar trees, and the best wood comes from such. But small trunks which are knotty and fluted do not offer much encouragement to the pencil manufacturer. Perhaps a larger number of cedar trees are now standing in Texas than ever stood in Tennessee, yet little pencil stock ever comes out of Texas. The trees are usually too small, knotty, and with too little red heart.

Southern red cedar is not the sole pencil wood to be had in this country. In Florida some of the best stock is cut from a species closely related and called juniper or Barbadoides juniper (*Juniperus barbadensis*). It has been pronounced to be the equal of the regular pencil cedar; but it is scarce, and is found in certain restricted localities only. Between the Rocky Mountains and the Pacific Coast are several cedars closely related to that of which pencils are made, and their wood is believed to be in every way suitable for pencils, but not much of it is to be had. Trees are scarce and scattered, and most of them are of poor form and small size.

The incense cedar of California has met considerable use as pencil wood in recent years, though the claim has not been made that it is in all respects equal to the southern red cedar. In one particular it measures with or above the southern tree, that is, the trunk is larger and contains more clear heartwood, notwithstanding the white sapwood is relatively thick. The tree has been called incense cedar, but the name is not due to the smell of the wood, but to the odor of foliage and green twigs.

Pencil makers must handle much wood that is not high class, notably the sapwood and the billets which contain flinty streaks. Such material is usually thrown out in selecting pencil stock. It may be dyed and then made into cheap pencils, or it may be manufactured into





MEASURING TAPES

These measuring tapes are used by surveyors when they desire to make accurate measurements. The whole instrument is metal except the handle, but that is an important part and is of wood. The hand retains a firmer and easier grip on wood than on metal, and for that reason the wooden handle is preferred.

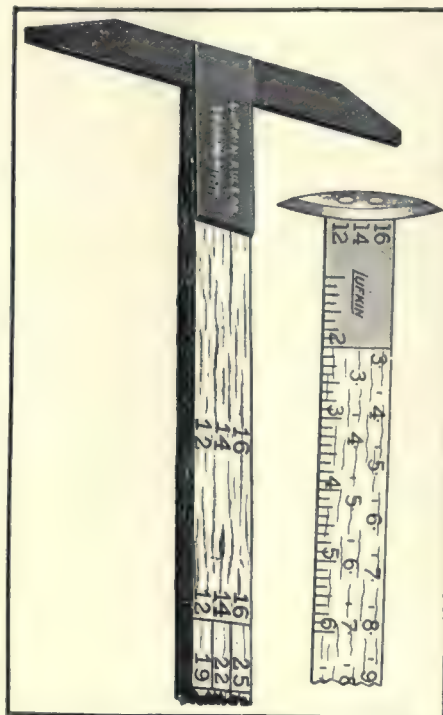
pen holders. The latter article does not demand a colored wood, or one that whittles nicely. It is thus practicable to utilize rejects from the pencil factory in making other articles. Pen holders are made of many woods other than cedar, and they are so well covered with paint and varnish that the user may never know the kind of wood. A pretty large percentage of penholders are pine; some are yellow poplar, basswood, tupelo, and other common woods.

It was once a custom, though it was perhaps not the general custom, for pencil manufacturers to soak thoroughly their cedar logs in ponds and rivers and leave them there exposed till their sapwood had disappeared by decay. That was easy to do because the sapwood is so susceptible to decay and the heartwood so resistant that the former disappears long before the heart has even been affected by rot. Three or four years, under favorable conditions, suffice to rot away the sapwood. While that is taking place, the heart becomes mellow and brittle precisely the condi-

tion desired by the pencil maker.

Less rotting is purposely done now than formerly, because the white sapwood is put to use for pen holders and cheap pencils. Deliberate waste is no longer popular, even the waste of a thing as cheap as cedar sapwood.

Wood intended for lead pencils passes through several processes or operations. The trees are cut down and the logs are sawed off the same as any other logging operation. The



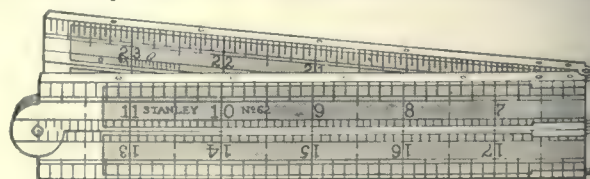
RULES FOR LOG AND BOARD MEASURE

The upper cut in the accompanying illustration represents a board rule, while the lower is designed for measuring the contents of logs. Both are of wood and in most instances are made of hickory. They are made in different patterns to meet various needs and to conform to different tastes.

logs may be sent directly to the factory which carries out all the work till the finished pencil is ready to pack for sale; but generally the commodity known as a pencil slat is a product intermediate between the log and the completed pencil. The slat is the product of a special mill. It is a thin board about seven inches long and of a thickness equal to half the diameter of a lead pencil, and wide enough for

six pencils side by side. The slat is passed through a machine which shapes each half pencil and cuts a groove for the graphite. In that state of manufacture the slats are shipped to the factory that inserts the graphite, glues together the two longitudinal halves, polishes, prints, and boxes the pencils, and they are ready to ship.

It is worth remark that though the product is called a lead pencil, it contains not a particle of lead. The name simply conforms to the popular belief that the marking substance is lead. Real lead pencils were formerly made. The process consisted in pouring melted lead into a goose quill, or into the pith cavity of some small weed or reed, and thus make a pencil that would leave a black mark on white paper. It was expected of the old-time pedagogue, as a part of his educational attainments, that he should be able to make lead pencils for his pupils who were far enough advanced to need them. The process of making was simple, but a little dangerous. The quill that was to receive the lead was stuck upright in a potato or a turnip while the pedagogue poured in the molten lead from a ladle or an iron spoon. Usually all went well; but sometimes when the hot lead came in contact with the wet pulp of the vegetable, a resulting flash of steam threw the molten metal in every direction, and the eyes, hands and faces of teacher and pupils were in danger of severe burning. The quantity of hot lead was usually so small that no serious damage resulted; but if such operations were attempted in schoolrooms today, the National Safety Council would likely get busy immediately and require the



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BOXWOOD MEASURING RULE

Boxwood is better than ivory in the manufacture of measuring rules because the wood is less susceptible to weather changes than is the ivory. Therefore, wooden rules fill more exacting places than those of more expensive material. (Photograph by courtesy of the Stanley Tool and Level Company, New Britain, Connecticut.)





THE SOURCE OF CHERRY LUMBER

Many of the best professional and scientific instruments are made of cherry. This wood has become scarce and the price is high. The accompanying picture shows four fine wild cherry trunks on one of the ranges of the southern Appalachian mountains. It is a tree of slow growth and of solitary habits.

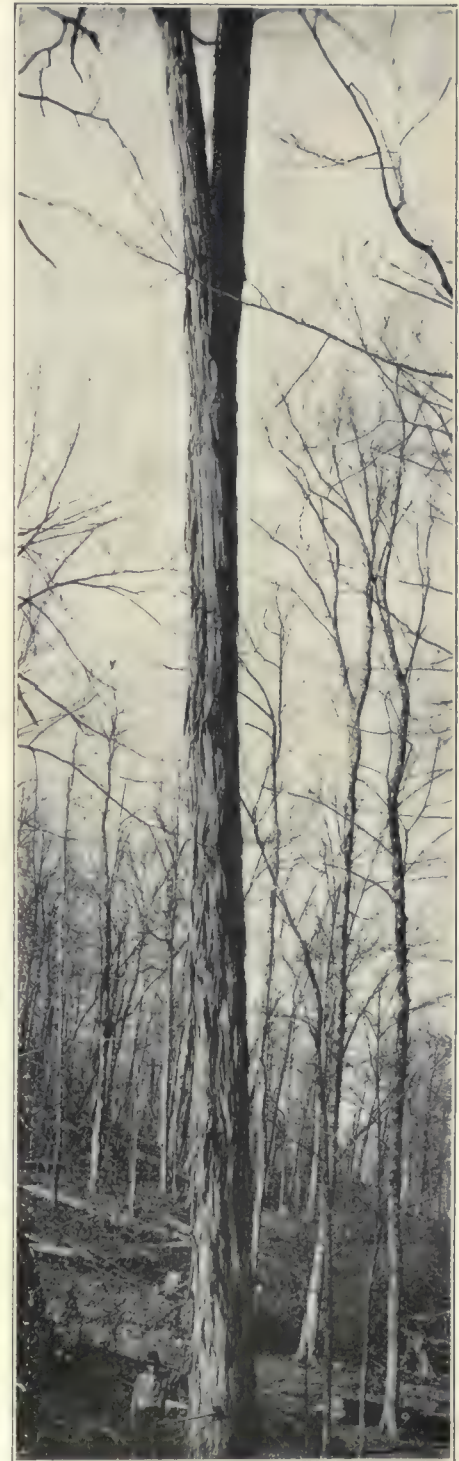
teacher to manufacture the pencils outside of school hours. The name "lead pencil" is all that has survived from the old custom.

The lead pencil is only one of several items included in the professional and scientific instrument industry.

Other items are rulers, squares, spirit levels, thermometers, cameras, tripods and various drafting instruments. Many other articles are included, but the line which separates them from the industry known as "novelties" is not definitely fixed. Some persons might class a certain article as a novelty while others would consider it a professional or scientific instrument. The thermometer is an example of an article of doubtful class. The glass tubes and the graduated scales belonging to thermometers are often mounted on boards or wooden frames. If the thermometer is high-class, it is clearly a scientific instrument; but if it is cheap and is primarily intended for advertising purposes, as many such thermometers are, it ought to belong with novelties. The same holds true of rulers. If carefully planned and well made, they are in the scientific instrument class; but if cheap, and intended to contain printing or stenciling to display advertisements they do not properly belong to scientific instruments. The list of woods which follows contains woods of various kinds, and they meet various uses.

<i>Kind of Wood</i>	<i>Feet per Year</i>
Cedar .....	20,050,000
Maple .....	4,425,167
Basswood .....	2,619,070
Beech .....	1,259,600
Birch .....	1,062,050
Yellow poplar .....	1,001,400
Hickory .....	971,332
Cherry .....	732,750
West India boxwood .....	653,848
White pine .....	601,670
Oak .....	372,100
Chestnut .....	367,000
Rosewood .....	219,353
Ash .....	123,600
Mahogany .....	82,862
Red gum .....	75,000
Black walnut .....	71,200
Cocobola .....	64,800
Yellow pine .....	46,600
Lignum-vitae .....	37,236
Redwood .....	31,220
Dogwood .....	31,200
Butternut .....	30,000
Douglas fir .....	30,000
Applewood .....	25,000
Sugar pine .....	23,500
Cypress .....	23,000
Spruce .....	16,000
Tupelo .....	12,000
Western yellow pine .....	8,000
Teak .....	1,000
Ebony .....	500
Elm .....	200
Cottonwood .....	170
Total .....	35,070,928

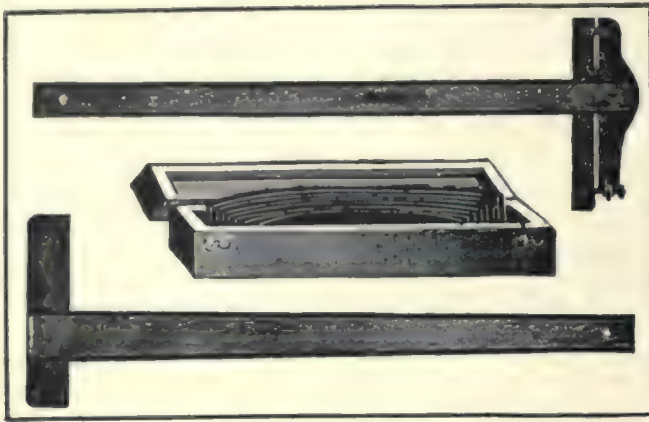
The most satisfactory test for determining whether a kind of article should be considered as a novelty or as something better, is based on cost and quality. Novelties are cheap; instruments are expensive. A division of that kind cannot be made according to the quality of the woods used,



TOUGH, STRONG RESILIENT

Hickory is indispensable in the manufacture of many professional and scientific instruments, particularly where toughness is required, as in the making of lumbermen's measuring rules.





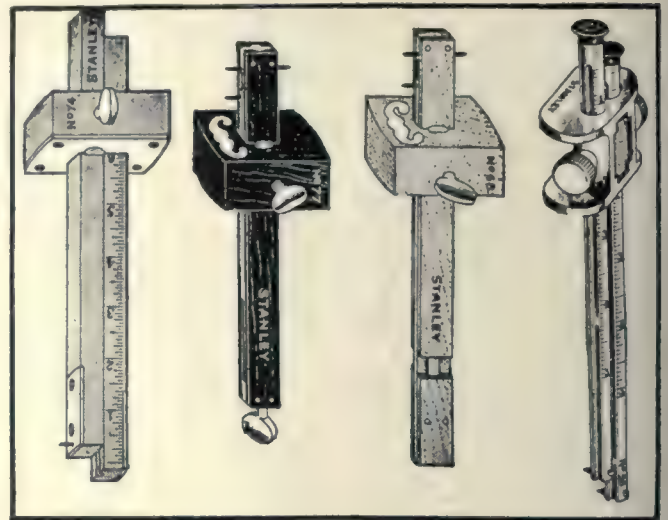
RAILROAD CURVES AND T-SQUARES

T-squares are often of mahogany and cherry, or of black or Circassian walnut, though other woods which season nicely may be used. The railroad curves shown in the picture are made of pear wood. Experience has shown this to be an excellent wood for this instrument and it is preferred before most others.

because a few fine woods are made into rather cheap articles, and some woods which are common enough may form parts of fine instruments.

Seven of these woods are foreign, the others native of the United States. The foreign woods and the principal countries of origin are here given:

West Indies, boxwood (*Tabebuia pentaphylla*) is hard, strong, of a yellow color, and has a fine, smooth grain. The wood is obtained in the West Indies, Panama, Brazil and adjacent regions. It is known under various names in different countries, among such being zapatero, white cedar, corno and whitewood. It



SMALL WOODEN GAUGES

A class of gauges which are alike in their main features but different in minor particulars and details. The finest are of boxwood or ebony, but the common sorts are quite satisfactory if of beech, hickory, maple, hornbeam or mahogany.



WOODEN TRIPODS

The tripod is in general use for mounting scientific instruments which require a firm base and need to be moved frequently from place to place. The illustration herewith shows a telescope on its tripod, and another style of mounting is shown, such as commonly forms part of the surveyor's transit. Maple is most used for this purpose.

is nearly as hard as Turkish boxwood and one of the most acceptable substitutes for it for many purposes. It is liable to split open during the process of seasoning, and for that reason it is difficult to season. This tree seldom develops heartwood that is distinguishable from the sap by its color. The largest use is in the manufacture of fine rulers. It does not go much into cheap articles where less valuable woods will answer. It is particularly valuable for rulers because of its hardness and fine grain.





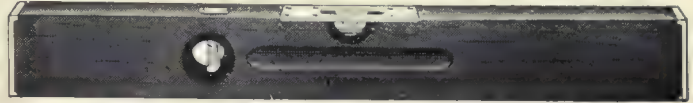
#### INCENSE CEDAR FOR LEAD PENCILS

This splendid cedar from the Sierra Nevada Mountains is now being substituted for the southern red cedar in the manufacture of lead pencils. It is a much larger tree than the southern cedar, but it is wanting in odor, the wood is not so red nor is it so soft as that of the southern tree.

facilitate the marking of very fine lines on the measuring scale, at least as small as the sixty-fourth of an inch. It is one of the straightest-grained woods in the world, and that gives it additional value as material for the manufacture of rulers. Turkish boxwood is now so scarce and expensive that very little of it comes on the market, being manufactured into rulers in this country, and its place has been largely taken by the West Indies species.

The name rosewood is often heard, but the same species is not always meant. Several trees of the genus *Dalbergia*, but of different species, are included in the term. They come from widely separated countries, among them being Africa, South America, Asia and Central America. A large part of the rosewood used in the United States Statistics do not show that a single foot of it is now of a species from Africa (*Dalbergia Melanoxylon*). This comes from Brazil, but considerable use has been reported is best known as African blackwood or African grendilla. The Brazil wood is *Dalbergia nigra*. All the rosewoods belong to the same order of trees as our locust. The

color is usually black or purple. The name is not bestowed on this wood because of the color, as might be supposed, but on account of the delicate odor of the freshly-cut wood. The odor does not persist long, for it soon ceases to attract. The wood is named for its odor, but is valued for its color and fine grain. It is heavy. Perfectly seasoned specimens may sink in water. It



#### THE WOODEN SPIRIT LEVEL

This instrument is used to plumb walls and posts and to determine whether foundations and floors are horizontal. Various forms and patterns are in use, but wood is one of the most satisfactory materials that can be used. (Photograph by courtesy of the Stanley Tool and Level Company, New Britain, Connecticut.)

varies much in hardness and may equal ebony. Its principal uses in the professional and scientific instrument industry are for T-squares, spirit levels, cameras and drafting instruments.

Several different woods are bought and sold under the name mahogany. They come from different parts of the world, and some of them are in one family of trees and some in another. If strict botanical definitions are insisted upon, the name could be applied only to the mahogany grown in tropical America; but woods of Africa,



#### THE DRAWING TABLE

The table here shown has a metal stand, but many have wood. The top, which is the main part of the table, is always of wood, and it is hinged so that it may be tilted and inclined in any way that the operator may wish. The top of the table is generally of basswood or white pine, which are so soft that thumb tacks will sink into them easily.





#### WOOD FOR THERMOMETER BACKS

The glass tube of a thermometer will be broken if fastened to a wood that warps, so the better grade of thermometers have backs of walnut, cherry or mahogany, as they show little tendency to warp. These logs are black walnut.

India, Australia and the Philippines pass as mahogany, without too close insistence on botanical distinctions. Mahogany is little disposed to warp, shrink, or swell, and that characteristic makes it of special value for instruments which must retain their shapes under climatic changes. The makers of cameras employ a large quantity of mahogany, and it is liked for T-squares, and for numerous other small articles.

The uses of cocobola, *lignum-vitæ*, teak and ebony are less extensive, and although these foreign woods are serviceable and handsome they cannot be considered very important in this industry because not used in large quantities.

The T-square is so called from its shape. It is used by draftsmen and mechanics in establishing perpendiculars. In making this instrument, a wood is wanted which is not liable to warp, and the best are mahogany and walnut, though a number of other hard and dense woods are employed. This square is often of large size, and it cannot well be made of steel because that metal is too heavy. Wood holds first place.

A large bill of lumber goes into thermometers; but most of these are of ordinary woods, such as yellow pop-

lar, basswood, tupelo and pine. Thermometers may be only a few inches long, or they may be three or four feet, and in the aggregate they call for a rather large amount of wood.

By some unwritten law or widely respected custom, the spirit level is supposed to be made of cherry, though many are not, some being mahogany, walnut and other woods that hold their shape well after having been seasoned. It is a tool employed by builders in plumbing walls and leveling foundations and sills. Wood is rated superior to metal for large spirit levels because weight must be held within reasonable limits. Other advantages are claimed for wood, the chief of them being that this material is almost entirely free from tendency to become distorted under the influence of heat and cold.

Wood's superiority to other available materials for cameras is unquestioned. Its light weight alone gives it an advantage. The wooden portion of the camera is a box which contains the plates or films and the lenses.

Several woods serve for tripods for cameras, kodaks, and surveying instruments. Among the best are birch, maple, walnut, mahogany, rosewood and ebony.



# BIRD GUARDIANS OF THE TREES

By Edward Howe Forbush

Massachusetts State Ornithologist

**I**N studying the economic relations of birds to man and other forms of life, this question is most important: What do birds do in the world? As we investigate their activities from our viewpoint, we find few birds altogether useful to man. Many are harmless and some harmful, but the vast majority of birds which come in close contact with man and his property benefit him far more than they injure him. In primeval nature all birds are beneficial.

The well-being of each form of life depends more or less on the welfare of other organisms. Take the relations of the bird and the tree. In the battle of life birds and trees are interdependent. Trees furnish buds, blossoms, fruit and seeds which birds use for food. Trees sup-

port many insects that are eaten by birds; also, they provide birds with hiding places in hollow trunk and limb, excellent nesting places and leafy shelter from sun and storm. Birds, on their part, protect trees by eating the surplus insect enemies of trees, thus preventing undue increase of these enemies. Humming birds like bees fertilize tree blossoms, and many birds distribute and plant tree seeds. Bartram believed that Jays alone would soon replant all cleared lands were it not for the implements of soil cultivation.

a single tree sometimes run into hundreds, and the individuals of each species if unchecked would soon number untold millions. Before such countless hordes man would be powerless. We can spray orchards and shade trees with poisonous insecticides, but we would stand aghast at the impossible task of spraying all the trees in all the woods. We must perforce depend on the natural enemies of insects to protect our forests. Fortunately, birds and other foes of insects, wherever their numbers are sufficient, act as effective forest guardians.

Professor F. E. L. Beal, whose experience in studying the food of birds was greater than that of any man now living, believed that birds were an effective check upon the increase of insects, and that it was doubtful



CHICKADEES JUST FROM THE NEST

Photograph by Cordelia J. Stanwood.

They destroy spruce moths and many other forest pests. These youngsters appear to be deliberately posing for an effective picture.

port many insects that are eaten by birds; also, they provide birds with hiding places in hollow trunk and limb, excellent nesting places and leafy shelter from sun and storm. Birds, on their part, protect trees by eating the surplus insect enemies of trees, thus preventing undue increase of these enemies. Humming birds like bees fertilize tree blossoms, and many birds distribute and plant tree seeds. Bartram believed that Jays alone would soon replant all cleared lands were it not for the implements of soil cultivation.

The possibilities of the increase of forest insects are so appalling that potent forces to keep them within bounds are indispensable; otherwise, insects might destroy all forest trees. The numbers of insect species that attack

if anywhere else in the animal kingdom "any other restraining influence so important" could be found.

The normal reaction of birds upon the insect enemies of trees is that of annual and perennial repression. All through the winter months our forests are searched, tree after tree, by Nuthatches, Titmouses, Creepers, Kinglets and Woodpeckers for eggs and other hibernating forms of insects. As spring advances, as buds open, as tiny caterpillars and grubs emerge from the egg, come the hosts of arboreal birds—Sparrows, Thrushes, Warblers and others—sweeping through the woods in migration. Under normal conditions they destroy something like ninety per cent of the tiny caterpillars hatching upon the external parts of trees before these caterpillars become





Photograph by Cordelia J. Stanwood.

#### LITTLE TREE DOCTORS

Hairy woodpeckers just from the nest. They seem possessed with a mania for destroying forest insects and larvae and are indispensable to the scheme of forest protection.

large enough to attract our notice. Then come the breeding birds, searching the trees all summer for food for their insatiable young, and with autumn comes another immense migration of hungry birds, penetrating all the forests and searching for what the summer birds have left.

Thus is exerted the regular repressive influence of birds upon the enemies of trees, and if there are birds enough, and all the other forces of repression work in harmony, insect pests do no appreciable injury, the trees flourish and the forest remains in full leafage and fruitage.

Too well, however, we know that this is not everywhere and always the case. There are pests introduced from foreign shores that seem to be invincible. There are local outbreaks of native pests that the birds seem powerless to check, and sometimes these irruptions assume alarming proportions. Such infestations, however, may often be traced to a prior scarcity of birds, and when such invasions occur, they are almost certain to be followed by an increase of birds drawn from the surrounding country. Such augmentation of the feathered tribes often has been known to check a great invasion of insects, for it is one of the functions of birds to gather swiftly from far and near, like winged policemen of the air, to quell such disturbances.

How a scarcity of birds may result in the destruction

of forests is told by Wilson Flagg in the annual report of the Massachusetts State Board of Agriculture for 1865. In 1798 the forests in Saxony and Brandenburg were attacked by lepidopterous borers that killed the trees. The calamity became so general that expert foresters and naturalists were employed by the regency to inquire into its cause. They reported that the unusual and extraordinary increase of these insects was due to the absence from the forests for several years of certain Woodpeckers and Titmouses.

An increase of birds is followed always by a decrease of insects on which they feed.

Mr. B. A. Arnold told me that in the summer of 1913 a spruce moth became so abundant on parts of Mt. Desert Island that the people began to fear the total destruction of the spruce woods. He had noticed that numerous red squirrels were destroying eggs and young birds, and therefore on his own estate, situated on a peninsula, almost an island, he had shot all the squirrels. As a result of this the birds on his place increased largely. In a short time the trees were cleared of both caterpillars and moths by the birds, which fed them to their young; while on the mainland, where squirrels were still numerous and birds were few, the devastation of the trees continued.

Woodpeckers are indispensable in the forest. Old "Mr. Peckerwood" is a tree doctor. He performs surgical



Photograph by Cordelia J. Stanwood.

#### YOUNG FLICKER EXPLORING ITS FIRST TREE

It will be relentless in its search for the enemy and merciless when the enemy is found.



operations that save the trees. When the leopard moth was introduced into this country from Europe, it seemed at first as if it were destined to destroy all our trees, but as time went on, we found that it killed no trees except in and near the cities, where the ubiquitous English Sparrow had largely driven out other birds; in the country, where native birds were numerous, the ravages of this moth soon were checked. In city after city its wood-boring larvae killed first the smaller branches, then the larger ones, and finally many trees died from its attacks. Many ancient trees in historic parks, like Boston Common and the grounds of Harvard University in Cambridge, have been cut down or rooted out because of this and other tree pests, but in the rural districts the larvae of the leopard moth now do little injury, and in the woods they are hard to find. Woodpeckers search for them, dig into their holes, drag them out and wax fat upon such sustenance. The Downy Woodpecker, the Hairy Woodpecker and the Flicker all seem possessed with a mania for killing these and many other destructive wood-boring larvae. Better equipped than a telegraph lineman for climbing; supported by a spurred tail; provided with hooked claws for clinging to the bark; hammer-headed, chisel-beaked, and armed with a tremendously long, strong, lance-pointed, barbed, extensile tongue, the



Photograph by C. W. Leister

#### A FAMILY OF CHESTNUT-SIDED WARBLERS

They feed on insects that injure woodland trees, and so perform a real service for humankind.

Woodpecker drills through the wood directly into the spot where the borer lies hidden, pushes in the tip of his barbed tongue, spears the victim and whips it quickly into his open beak. The wonder of it all is that "Dr. Peckerwood" knows just where to operate. He needs no X-ray or stethoscope to determine the seat of the trouble. In summer he may hear the borer working in the wood, but in winter, when both insects and trees are frozen, when there is no possibility of any sound to guide him, the tree doctor always operates just where the hibernating, motionless insects lie snugly hidden in their cells. We can only surmise that he locates them by tapping with his bill, and that his auditory nerves are so sensitive to the slight differences in sound vibration that he knows exactly where to drive his tunnel. In any case, be the enemy a few wood-boring ants collected at different points along their channels, or the larvae of moth or beetle, the little tree-surgeon unhesitatingly drills right to the spot. Cocoons hidden under the bark are pierced in the same way. It is as if the eye of the Woodpecker could see through bark and wood, and his perseverance in digging out the enemy never fails. Even the Sapsucker, execrated as he is for destroying or disfiguring certain trees, is of some service. In the year 1911 a bark beetle had attacked the pine forests of the coast region of South Carolina and many trees were destroyed. In the autumn large numbers of Yellow-bellied Sapsuckers came down from their northern homes and worked upon the pines attacked by these beetles. In the autumn of 1912 I examined many of these trees. Those that had been worked by the Sapsucker had recovered, while those that it had not drilled were dead or dying. The bark of the healthy trees showed many scars where the Sapsuckers had drilled through to reach the beetles.

Insects are by no means the only enemies of the trees



Photograph by Cordelia J. Stanwood.

#### THE GREAT HORNED OWL

This bird protects young trees by killing mice and rabbits. It is a premium ratter.



that must be held in subjection for the good of the forest. No doubt squirrels, rabbits, mice, rats and some other rodents when in small numbers may be beneficial or at least not injurious to the forest, as both squirrels and mice are natural tree planters, but if any of these rodents become too numerous, they immediately become destructive to the trees. Squirrels, rats and climbing mice reduce the friendly birds by destroying their eggs and young. Also, squirrels and mice, if too abundant, eat practically all the tree seeds, leaving almost none for propagation. Mice and rabbits kill young trees by gnawing off the bark in winter, thus girdling them. Therefore, hawks, owls and other predatory birds that kill rodents and so tend to hold their numbers down perform an inestimable service in the forest. Most of these birds nest in the woods, and although they hunt much for field mice in the open, they feed also on squirrels, wood mice and rabbits. They kill some birds, but as

muscle, its great talons contract by means of powerful tendons which slide easily through grooves in the tarsal bones and draw over the bended joints so that the full weight and strength of the bird sends them through the shrinking vitals of its prey. Its face appears satanic with its horn-like crests, cruel beak and great glaring, yellow eyes. Its wierd voice when heard in the stillness of the night strikes terror not only into the breasts of the timid ones on which it preys, but often into human souls as well. Primitive people regard it as the very personification of Satan, and name it "The Evil One." It is said that certain tribes in the West were so superstitious regarding this bird that they believed that if one alighted on the roof of a man's lodge, that man was doomed to die, and such was the grip of this belief upon them that the doomed man actually pined away and died—that is, if he saw the bird alight on his domicile. Ordinarily the call of this owl is a deep booming *whoo hoo!*



FLEDGLING MAGNOLIA WARBLERS

Photograph by Cordelia J. Stanwood.

Fed by their parents on forest insects, they will thrive and wax fat and eventually fill their places in the protective army of beautiful birds guarding our forests.

compensation for this they protect birds by destroying their enemies—skunks, weasels, mice, squirrels, etc. Squirrels become tree planters largely through the agency of hawks and owls. The squirrel buries nuts, acorns and other tree seeds in the leaf mould on the forest floor that he may unearth his treasures in the lean days of late winter and early spring. A squirrel killed in winter by hawk or owl has planted a hickory wood or a lot of pine and other trees for all creation. The Broad-winged Hawk and the Great Horned Owl shown in our illustrations are useful as forest birds, although this particular owl is an enemy of game birds. Most of the hawks and owls feed much more upon destructive insects and rodents than upon birds or game.

The Great Horned Owl, a typical woodland bird, is perhaps the most powerful of them all, only inferior in strength and fierceness to the eagle. Ponderously

*hoo-whoo! hoo-whoo!* varying somewhat in order of syllables and depth of tone with different performers, but it has a great variety of wild cries, among them a high, startling, clearly enunciated *wa 'hoo* or *waugh 'hoo*, the first syllable with a rising or interrogative inflection, the second a falling note, but often followed by a variety of others, thus *waugh oo oo oo oo oo-oo*, or *waugh oo oo oo oooh oo oo oo*, or *wu wu wu wu waugh waugh*. This owl has a piercing scream or yell, also a long series of gabbling notes. I well remember one evening, sitting alone in William Brewster's cabin in the Concord woods and hearing many strange sounds which I attributed at first to a child trying to imitate a baying hound, but as the sounds came nearer they were recognized as notes of the Great Horned Owl, and for some time that owl and I held quite a conversation by moonlight. The owl, however, would never shine in society





Photograph by Cordelia J. Stanwood.

#### YOUNG BROAD-WINGED HAWK

This baby belongs to a valuable economic family, for the Hawks feed on mice that destroy young trees.

by reason of its conversational powers, as its remarks are much more forcible than elegant, and it frequently carries about in its plumage the penetrating effluvium of the "woods pussy." Many skunks are slain by this dark demon of the night.

The plumage of the owl is so enveloped in fine and downy filaments that its flight is noiseless. It takes its victims unawares and therefore is able to overcome animals much larger and heavier than itself.

One night a farmer near Worcester, Massachusetts, heard an agonized squall from a big tomcat which had been promenading in front of the house in the moonlight. From the open door the cat could be seen in the grasp of an owl, and before the farmer could secure his loaded gun and shoot the bird, poor Tom had yielded up his nine lives. The powerful owl had struck him noiselessly from behind and had quickly ripped out his vitals. If any of his lives were left when the shotgun came on the scene, that finished him. The farmer suggested that the owl seemed to be taking that cat apart, as the farm boy once took apart an alarm clock, "to see how it went."

One of my own experiences will serve to illustrate the owl's noiseless approach. One autumn evening I stepped out of my little camp in the Wareham woods to take some exercise before bed-time. It was a clear, lovely night, with a full moon riding up a cloudless sky; not a breath of air stirred the plumes of the tall white pines about me,

which were softened and etherealized by the pale moon's light. I had begun stretching and swaying the muscles of my neck and torso when a loud cry, half shriek, half laugh, sounded from the air within a few feet of my head, followed by a jumbled medley of strange sounds, profanely expressive of astonishment and disgust, which passed by me swiftly and away toward the meadow. Startled, I turned to see, but nothing saw. Without a sound of quill or plume a Great Horned Owl had passed close by my head, and so fast it clove the air that it was out of sight in the moonlight before my eye could find and follow its vanishing shape. One might have imagined it the disembodied voice of an evil spirit passing swiftly through the moonlit woods. I had been wearing a white hat and the owl had been sitting in the top of some tall pine. As his keen eye glanced over and past the roof of my cabin, he perceived that moving white object. He had swept down to strike, and had discovered his mistake only when he had passed over the roof and saw what was under that hat. Look before you leap—is a wise maxim for owls and men. Very



Photograph by Cordelia J. Stanwood.

#### A RAPID GROWER

The same Broad-winged Hawk taken two weeks later, showing how quickly the plumage grows and the bird matures.



likely in the distance he mistook the hat for a white pullet or a rabbit. To a superstitious person not knowing the source of such sounds the incident might have been disquieting.

The Horned Owl slays rabbits, rats and mice by wholesale. Dr. A. K. Fisher in his bulletin on the Hawks and Owls of the United States, quotes Mr. O. E. Niles, who found the remains of 113 dead rats at one time on the ground below a Great Horned Owl's nest. This bird is the chief enemy of the common crow and we should not have so many crows if owls were not shot indiscriminately.



Photograph by C. W. Leister.

#### SOME WOODLAND MOUSERS

The younger members of a screech-owl family. Note the Hebraic aspect of their countenances. When the sun sets their day begins.

As the hunter, woodchopper and settler subdue the wilderness, the hoot of the Horned Owl is heard less and less in the woods, until at last all the owls of this species breeding in settled regions are wiped out. This is what has happened now in a large part of the eastern United States. Now and then in some winters, when food is scarce in the north, Northern Owls may drift here in migration; otherwise the Horned Owl is a disappearing bird. In the forests he may survive, but otherwise the land that knew him of old shall know him no more.

## BOY SCOUTS ADOPT A TREE



#### THE TREE THE BOYS ADOPTED

This unusual tree is a native prone juniper near the Masonic Homes at Elizabethtown, Pennsylvania. It is at least 80 years old, and now measures 48 feet in diameter, and is 24 inches high. The limbs lying on the ground do not take root. It has been successfully propagated at the Masonic Homes by cuttings, and a large number of young trees are now being developed there. The Boy Scouts of Elizabethtown have adopted this remarkable tree, and have protected it from vandals by erecting a substantial fence around it. It is perfectly hardy and free from blight. The foliage is of a deeper blue-green than tint ordinary trees of the same family. The picture was sent AMERICAN FORESTRY by the Hon. George B. Orlady, presiding judge of the Superior Court of Pennsylvania.



# EDITORIAL

## OPPOSITION TO TRANSFER OF NATIONAL FORESTS

A STEADY barrage of resolutions opposing the proposed transfer of the National Forests in the United States and in Alaska from the Department of Agriculture to the Department of the Interior has had its effect in preventing any further advance of this measure in Congress. Senators and Representatives from all sections of the country have received these resolutions from civic and other organizations as well as protests from individuals. Both resolutions and protests have been vigorous and of the character which compel attention. Apparently those who support the measure have been surprised by the rapidly spreading and wide-spread opposition to it, while those who oppose it have been cheered, not only by the protests, but also by the statement of President Harding in his speech before the National Agricultural Congress in which he emphasized the close relationship between forestry and agriculture. This relationship is one of the best arguments in favor of allowing the National Forests to remain under the jurisdiction of the Department of Agriculture.

The forcefulness of the resolutions is noticeable. The Pennsylvania State Forest Commission declares the proposed transfer to be "unnecessary, unjustified and dangerous to the cause of forestry in Pennsylvania and the nation," and adds that "it would ruin the Forest Service." The Penobscot (Me.) Forestry Club says "it would be contrary to the public interests." The Asheville (N. C.) Chamber of Commerce declares that as the forest is a product of the soil "the extraordinary progress made in the protection of our forests would be immensely retarded and the whole forestry program set backward, we believe, by changing the administration of forestry affairs from the Agricultural Department to the Department of the Interior." The California State Board of Forestry, speaking for the forestry interests of that state, "records its emphatic disapproval of such transfer," while

the Pueblo, Colorado, Commerce Club sends out the resolutions of the San Isabel Public Recreation Association, in which it concurs and which declared that "this organization vigorously protests against any change and earnestly requests our representatives in Congress to oppose any transfer of the National Forests." The Rye Recreation and Progressive Association, of Rye, Colorado, states "our relations with the Forest Service proves to us that their methods of administering the forests are to the best interests of all concerned" and voices its protest also. The Maine Forestry Association "feels that the proposed transfer would be a severe blow to the present high efficiency of the Forest Service and would inevitably result in a loss of ground previously gained in the struggle for intelligent forest conservation" and opposes the transfer; and the North Carolina Forestry Association declares "we strongly condemn the movement to transfer some or all of the activities of the Forest Service from the United States Department of Agriculture, where it has been most efficiently administered during the past fifteen years, to the Department of the Interior."

The California Forest Protective Association, composed of timberland owners, voices its protest in no uncertain words by saying "such transfer would not be effective as to economy or unity of organization, and would very probably result in destructive changes in the work of the Forest Service and the administration of the National Forests."

These quoted are only a few of the expressions of opinion from influential organizations, but they express the character of all of the protests which have been made and those which are to be made—protests which Congress cannot possibly ignore—and which will undoubtedly make a decided impression upon the representatives of the people.

## OPERATION OF THE WEEKS LAW THREATENED

PUBLIC interests are seriously threatened by failure of the Bureau of the Budget to make adequate provision for the operation of the Weeks Law after June 30 of this year. Since 1911 the Government has been gradually acquiring land under this law because Congress has recognized the importance of the work and has made available the moderate appropriations necessary to carry out the original plan. This plan contemplates the ultimate acquirement of five million acres of forest lands on the watersheds of important eastern rivers. There has not been a single break in the continuity of the work. During the present fiscal year, which ends June 30, 1922, the appropriation was \$1,000,000.

Now comes the Bureau of the Budget with its appro-

priation estimates for the Department of Agriculture for the next fiscal year, and it reduces the item for the acquisition of land under the Weeks Act to a paltry \$50,000. If the item stands, it means practically the complete suspension or postponement of forest land purchases in the East, and this just at a time when the Government can buy land most advantageously. It is presumed that the Bureau of the Budget justifies its action on the ground of enforced economy. American Forestry recognizes the desirability of upholding the budget system and it endorses governmental economy when it is shown to be real economy and not at the expense of public interests or federal responsibility. In this instance it believes the Bureau of the Budget proposes



a mistaken economy. Let us examine briefly the operation of the Weeks Act.

Since initiation of the acquisition work in 1911, the Government has acquired 2,047,718 acres of forest land at the head waters of navigable eastern rivers. The cost to the Government, including the land, examination of titles, land surfaces, and all overhead expense, has been \$5.99 per acre. Since its acquisition this land has steadily increased in value. Many of the tracts have more than doubled in value and the demonstrable value of the entire holdings, including land and timber, is placed by the Forest Service at more than \$19,000,000. This is an increase of 60 per cent over their original cost and the estimate is admitted to be a very conservative one. In addition, the area is returning to the United States Treasury over \$100,000 annually by virtue of the sale of timber and other resources under strict regulations which are gradually increasing the timber productivity of the land.

Coming at this particular time, the action of the Bureau of the Budget, if concurred in by Congress, will do more than stop the acquisition of additional land. It will deprive the Government of an unusual opportunity to obtain some very desirable tracts at exceedingly favorable prices. The present economic situation makes now available forest lands at prices probably lower than at any time since the passage of the act, because of the need or desire of many owners to convert their cut-over lands into cash.

The significance of this opportunity is clearly reflected in the proposed purchase approved by the National Conservation Commission in December last, of 135,000 acres of forest land in different tracts at an average of \$3.33 per acre, or little more than one-half the average price paid for land previously purchased. According to the Forest Service, it has pending today in localities approved by the commission as desirable for purchase, offers aggregating almost 1,000,000 acres which may be purchased on equally favorable terms.

But let us not overlook the primary object of acquiring these lands. It is to protect and maintain the navigability of eastern rivers and the property and public interests dependent upon their navigability. That it is impossible to express in dollars and cents the value thus served is unfortunate, because, if it were, we believe the Bureau

of the Budget would not have dared to recommend the practical suspension of the acquisition work. The responsibility of the Federal Government to maintain the navigability of its rivers is generally and clearly recognized. Any action suggestive of the abandonment of that responsibility as provided for in the Weeks Act should be met by strong and wide-spread public protest.

Other public interests are involved. These lands will not only serve to preserve the headwaters of important rivers, but they will be the sources of much needed lumber in years to come. And today they provide recreational areas of great public value to the densely populated East. Their potential value as timber producing and recreational areas is tremendous.

We believe the Bureau of the Budget has misweighed public interests in halting work under the Weeks Act. The character of this work is such that a steady and continuous functioning of the agencies already established under the act is essential. The acquirement of large tracts of land, if done efficiently and on the best terms possible for the Government, must proceed gradually and without haste. That is the basis upon which for ten years the work has been planned and carried forward, and that is one reason why its results reflect conspicuous efficiency and progress.

If a reduction of the federal expenditures is absolutely imperative, let it be a moderate reduction which will permit the established and well-working agencies to function on an efficient scale, and not a reduction which virtually annihilates the operating agencies. To disrupt the work now not only is sure to be in the long run very expensive economy, but it threatens the resumption of the work on an adequate scale when the financial stress upon the Government may be less acute. An appropriation of \$500,000 for the coming fiscal year—one-half that of the present year—will enable the work to proceed in an effective way because of more favorable land values. At its recent meeting in Washington, the American Forestry Association passed a resolution urging upon Congress the appropriation of adequate funds for the continuance of the work. Readers of American Forestry are urged to lose no time in communicating their sentiments to their representatives in Congress.

## MORE WORK AND LESS TALK

**I**F THE ARMY EXPERTS, during times of peace, made no effort to improve guns, ammunition, and equipment, or failed to study new weapons of warfare, we should charge them with laxity, to say the least. If in times of general good health the medical experts made no attempt to guard against the next outbreak of influenza, smallpox, or typhoid, we should say they lacked foresight and energy. But in forestry we show all these forms of laxity and neglect. We are not merely per-

mitting what forests we have left to be destroyed at an appalling rate, but we are not even finding out how to replace them once we show enough courage and energy to call a halt on destruction.

In the long run the intensive practice of forestry, on the scale needed to yield the timber we require, must be based on a minute knowledge of the life-history and habits of trees, singly and in large groups. To get this knowledge will require a vast deal of investigation, ex-



perimentation, patient observation of forests of all kinds—in short, “forest research” on a nation-wide scale.

Forest research occupies a prominent place in the forest policy recommended by the recent National Agricultural Conference. It occupies an equally prominent place in the resolutions passed at the recent annual meeting of the American Forestry Association.

Says the Agricultural Conference:

“Research in forestry has already produced results of incalculable value to the people of the United States and is essential for future progress. Therefore, research in methods of maintaining and increasing the productivity of forest lands and in methods of utilizing forest products should be promoted in every practicable way.”

The resolution of the Association points out that “the establishment of an effective practice of forestry in this country depends upon a basic knowledge of the life and growth of our trees and the characteristics of their products,” and that “both scientific research in the laboratory and field experimentation and demonstration” are needed to gain this knowledge. The Association therefore urges upon Congress a better financial support of forest experiment stations and of the Forest Products Laboratory at Madison, Wisconsin.

The protection of forests from fire has been much emphasized in the last two or three years as a part of our national program of forestry. Fire protection is highly necessary, but it is not all of forestry any more than killing army worms and chinch-bugs is all of agriculture. Forestry is more than mere protection; it implies the growing of the best possible crop of timber both in quantity and in quality. It means much more than letting

nature run wild; it means a constant tending of the forest throughout its life. The difference between a wild forest and a cultivated forest is like the difference between a wild plum thicket and an orchard.

What has forest research to do with all this? Simply this: Forestry is coming sooner in this country than most people believe. But who knows how to practice forestry? Outside of the National Forests, a few state forests, and a few forest schools, there is no body of knowledge of even elementary forestry. For vast areas of forest land, our ignorance of what to do to make them grow really good crops of timber is profound. Some of these days the nation will establish a national program of forestry, and then we shall suddenly find that laws will not make forests grow and we shall be sadly lacking in the knowledge of how to make them grow.

Forest experiment stations should be established immediately in all the chief forest regions to work out these main problems of reforestation and forest management. They will cost this rich and powerful country only half a million dollars a year—an insignificant sum to make us ready for the day when we shall begin to grow timber on a national scale.

We urge the members of this Association to use their influence not only to help these bills through Congress, but to spread the idea of forest experiment stations far and wide, through newspapers, clubs, labor unions, chambers of commerce, schools and the like. Here is a big, concrete job in forestry worth any man's best efforts. Forestry must not remain in the stage of glittering generalities. There has been plenty of talk; let us now get down to hard work on specific jobs.

## WILL BUSINESS MEN HEED THE FOREST SITUATION?

**A** LONG with coal and transportation, forests are first essentials to the prosperity of American business. As evidenced by the experience of 1920, an acute wood shortage pinches first the wood-using industries. Its effects then spread rapidly into related industries which use raw wood or forest products in more limited amounts. Soon business generally is disrupted and thrown into confusion. The coal mines are crippled by lack of mine timbers. The railroads are crippled by lack of railroad ties. Newspapers suspend publication or reduce their editions, and so on. It is a blood-letting malady which overtakes business in diverse and insidious ways.

The forest problem is thus a vital problem for American industry. It calls for the best and most enlightened thought which the business men of the country can bring to bear upon it. It must be worked out in a practicable and businesslike way and on the principle that good business is good only when it promotes the public welfare.

It is encouraging that the business men of the country have already begun to take note of our forest situation. American Forestry awaits with keen interest the report soon to be made by the Forestry Committee of the Chamber of Commerce of the United States. Mr. David

L. Goodwillie, a box manufacturer of Chicago, is chairman of this committee and has associated with him men representative of various lines of American industry.

This committee represents the greatest organization of business men of this country. It has spent many weeks investigating various conditions throughout the United States. It has held public hearings from New York to California. Lumbermen, wood users, foresters, lawyers, tax experts and economists have been heard. It has had the benefit of information gathered through years of effort by the Federal and State governments. It has had ample opportunity to view all important angles of the situation and to arrive at definite conclusions.

No greater opportunity ever existed to acquaint the business men of the country with the true state of our forest affairs. The character of the committee's report will largely determine its effectiveness. If the committee finds the situation to be deserving of consideration by the business men—and they can hardly find otherwise—and makes definite, clear-cut suggestions of remedial action, the subject will be brought to the attention of the Chamber's 800,000 members. This in itself would be of tremendous educational value.



# NOMINATIONS FOR OFFICERS OF THE AMERICAN FORESTRY ASSOCIATION

**T**HE by-laws provide for the election this year of a president, a treasurer, twenty-one vice presidents, and seven directors of the American Forestry Association.

The Committee on Elections, comprising Dr. Filibert Roth, R. S. Kellogg and Dr. Henry S. Drinker, appointed by the Board of Directors at the annual meeting, received suggestions and nominations for officers and have nominated the following:

## FOR PRESIDENT

### CHARLES LATHROP PACK

President American Forestry Association

## FOR TREASURER

### ROBERT V. FLEMING

Vice-President, Riggs Nat'l Bank, Washington, D. C.

## FOR VICE-PRESIDENTS

(21 to be elected)

### HON. M. L. ALEXANDER—Louisiana

Chairman, Conservation Commission

### HENRY C. CAMPBELL—Wisconsin

Editor, Milwaukee Journal

### ALLEN CHAMBERLAIN—Massachusetts

Editor, Boston Transcript

### FRED C. KNAPP—Oregon

President, Peninsula Lumber Company

### EVERETT G. GRIGGS—Washington

President St. Paul and Tacoma Lbr. Co.

### MRS. WARREN G. HARDING—Ohio

### DR. JOHN GRIER HIBBEN—New Jersey

President, Princeton University

### JOHN M. OVERTON—Tennessee

President, Tennessee Forestry Association

### THOMAS H. OWEN—Oklahoma

President, Oklahoma Forestry Association

### GIFFORD PINCHOT—Pennsylvania

Commissioner of Forestry of Pennsylvania

### JOSEPH HYDE PRATT—North Carolina

Director Geological Survey

### M. B. PRATT—California

State Forester of California

### DR. J. T. ROTHROCK—Pennsylvania

Member of State Forest Reservation Board of Pa.

### PROF. FILIBERT ROTH—Michigan

Dean of Forestry, University of Michigan

### HARVEY N. SHEPARD—Massachusetts

President, Massachusetts Forestry Association

### HON. B. H. SNELL—New York

Member of Congress from New York

### BONNEL H. STONE—Georgia

Chairman, Georgia Forestry Committee

### MRS. JOHN DICKINSON SHERMAN—Illinois

General Federation of Women's Clubs

### HERMANN VON SCHRENK—Missouri

President, Missouri Forestry Association

### LOU SWEET—Colorado

President, Colorado Forestry Association

### HON. JOHN W. WEEKS—Massachusetts

Secretary of War

## FOR DIRECTORS (7 to be elected)

Nominations by the Committee on Elections  
Appointed by the Board of Directors

Nominations by a Group of Members Whose  
Names are Given Below

### ELBERT H. BAKER

American Newspaper Publishers Association

### ROBERT P. BASS

Ex-Governor of New Hampshire

### F. W. BESLEY

State Forester of Maryland

### HENRY S. GRAVES

Former Chief U. S. Forest Service

### WM. B. GREELEY

Chief, U. S. Forest Service

### GEORGE W. SISSON, JR.

Ex-President American Paper & Pulp Assn.

### E. A. STERLING

Forest Engineer

### ELBERT H. BAKER

American Newspaper Publishers Association

### ROBERT P. BASS

Ex-Governor of New Hampshire

### F. W. BESLEY

State Forester of Maryland

### HENRY S. GRAVES

Former Chief U. S. Forest Service

### WM. B. GREELEY

Chief, U. S. Forest Service

### GEORGE W. SISSON, JR.

Ex-President American Paper & Pulp Assn.

### WM. L. HALL

Pres. Hall, Kellogg & Co., Chicago

The members making nominations for directors as mentioned above are: P. W. Ayres, G. H. Collingwood, J. S. Holmes, R. D. Forbes, J. G. Peters, V. H. Sonderegger, A. B. Hastings, Clyde Leavitt, C. D. Howe, J. A. Ferguson, G. R. Green, C. R. Anderson, F. W. Kelsey, Edw. Bird Grinnell, Barrington Moore, W. P. Wharton, K. W. Woodward, C. L. Stevens, Karl E. Pfeiffer, H. Nellis, Joshua A. Cope, R. Y. Stuart, W. G.

Hastings, R. S. Maddox, J. W. Toumey, R. C. Hawley, S. J. Record, H. H. Chapman, T. S. Woolsey Jr., W. O. Filley, J. H. Foster, R. S. Hosmer, Bristow Adams, A. B. Recknagel, C. H. Guise, S. N. Spring, W. C. L. Bazeley, H. Philbrook, P. T. Coolidge, G. T. Carlisle, Jr., R. D. Craig, I. T. Bode, G. C. Morbeck, G. B. MacDonald, L. H. Pammel, Chapin Jones, Ellwood Wilson, Edmund Secrest, H. P. Baker, P. P. Wells.

Of the nominees for directors, Mr. Wm. L. Hall wrote to the Committee on Elections definitely refusing the nomination. It will be observed that the nominations made by the Committee on Elections exactly parallel the nominations made by the above petitioners, with the exception of Mr. Hall. For the seventh vacancy in the list of directors the Committee on Elections has nominated Mr. E. A. Sterling, who has for many years faithfully served the Association as a director.

SIGNED:

FILIBERT ROTH

R. S. KELLOGG

HENRY S. DRINKER

Committee on Elections.



## ANNUAL MEETING OF THE ASSOCIATION

THE annual meeting of the American Forestry Association held at Washington on January 26th marked the fortieth anniversary of the organization. There was a good attendance. President Charles Lathrop Pack called the meeting to order, referred to the work of the Association during 1921 and in his address said:

"The year 1922 is a vital year in forestry in the United States. Let us mark this fortieth anniversary with a united front for a forest policy. Thanks to the fine cooperation of the editors of the country the American Forestry Association has awakened hundreds of thousands of people to the value of our forest resources. The Association has preached forestry day in and day out and now Congress is considering a bill providing for a national forest policy.

"Threatening the future prosperity of the country are two big items, our yearly loss from forest fires and our hundreds of millions of acres of forest lands which are not growing forests. Just what this means to big industries in states like New York and New England is shown in the three million dollars a year freight bill New England pays on imported lumber because of the idle acres close to her factory doors. The lumber cut in the state of New York has dropped almost sixty percent since

1910. Her consumers of lumber are paying \$66,000,000 a year for imported lumber and \$11,000,000 a year for state grown lumber. If that \$55,000,000 could be kept in the state you could see what the effect would be. They imported lumber three thousand miles by rail. As a result nearly 1500 wood using industries in the state of New York have closed up shop.

"Timber enough to build a five-room house every hundred feet on both sides of a road extending from New York to Chicago is destroyed by forest fires every year. With four people to a house these one hundred thousand or more buildings would provide a home for nearly one fourth of our yearly increase in population—a number sufficient to populate a new city each year the size of Cincinnati, New Orleans, Minneapolis, Kansas City or Seattle.

"During the past five years more than 160,000 forest fires have occurred in the United States, 80 per cent of which were due to human agencies and therefore preventable. The conflagrations burned over 56,488,000 acres—an area greater than that of either Ohio or Pennsylvania—and destroyed \$85,700,000 worth of timber.

"Stop this waste and put that material into houses. If



AMERICAN FORESTRY ASSOCIATION OFFICIALS

From left to right—Charles F. Quincy, treasurer and director; E. A. Sterling, director; Charles Lathrop Pack, president; Col. W. B. Greeley, chief of United States Forest Service, director; Dr. Henry S. Drinker, director; Ovid M. Butler, forester; Standish Chard, director, and Percival S. Ridsdale, secretary and editor of American Forestry.



you do various business interests concerned in construction, such as lumber dealers, carpenters, masons, and supply houses, would, it is estimated, benefit to the extent of more than \$400,000,000 annually. Bankers and real estate dealers would also profit by the sale of lands and loans on homes to the extent of an additional \$300,000,000. Take that thought home with you and present it to your banker and the real estate man.

"Therefore in welcoming you to this meeting, I want to urge that we present a united front on this fortieth anniversary for forestry. Let us get something done. Let us demand constructive forestry legislation from our national and state legislative bodies. The American Forestry Association can do a greater public service than any organization in the country in 1922. That service is continuing its educational campaign on the need of constructive forestry legislation with greater vigor and force as it expects to do."

Senator Irvine I. Lenroot of Wisconsin in an address on "Our National Forest Problem" emphasized the steady decrease in forest producing area and discussed features of the Snell and Capper bills. He earnestly advocated the speedy adoption of a forest policy.

Col. Henry S. Graves spoke on "The Objectives of a National Policy of Forestry" pointing out first the need of a well defined program of forestry and outlining the benefit to the country which will follow the adoption of a policy which will adequately provide not only for our needs in forest products but for recreational requirements as well.

Dr. Henry S. Drinker, who presided during part of the meeting, told how the business men of the country have come to a realization of the importance of forestry and are now deeply interested in the relationship of a forest policy and business conditions.

The proposed amended by-laws as published in the January issue of American Forestry, were explained by Col. W. B. Greeley who, with Col. Henry S. Graves, urged their adoption and they were unanimously adopted.

The Board of Directors announced the appointment of a committee on elections composed of Dr. Henry S. Drinker, chairman; Prof. Filibert Roth and R. S. Kellogg with Dr. J. T. Rothrock and Philip W. Ayres as alternates.

In the evening a smoker was given with Dr. Filibert Roth presiding. Addresses were made by Col. W. B. Greeley, E. T. Allen, Dr. Hermann von Schrenk, E. A. Sterling, Arthur Newton Pack, O. M. Butler, Axel Oxholm, Prof. Roth and others.

At the afternoon session the Committee on Resolutions, composed of Col. Henry S. Graves, C. F. Quincy, Dr. J. T. Rothrock and Prof. Filibert Roth, presented the following resolutions, which were adopted:

#### NATIONAL FOREST POLICY

*Whereas*, the forests of our country are being depleted with great rapidity, with wholly inadequate measures for replacement, and

*Whereas* the right handling of our forests is essential to every consumer of wood products, to many thousands of manufacturing industries, and to the welfare of the communities in the forest regions, and

*Whereas* our national and local needs will be met only by the practice of forestry upon private as well as public lands, and

*Whereas* the character of the forestry problem is such that it will not be solved except by the participation of the public in connection with private as well as public forests, be it

*Resolved*: That The American Forestry Association urge upon Congress the adoption of a sound national policy of forestry which will lead to the rapid extension of forestry in private forests, and be it further .

*Resolved*: That this policy should aim both toward the lessening of the difficulties in the way of private forestry, such as the present fire risk, unwise systems of taxation, lack of information regarding methods of practice, etc., and at the same time toward the establishment of such feasible requirements by the public in regard to private lands as may be essential to secure effective results and as will justify the public expenditures in co-operation with the states and private owners in fire protection, reforestation, research and experimentation and other measures of assistance.

#### ACQUISITION OF FOREST LANDS

*Whereas* our public forests constitute an essential feature of a national policy of forestry, as a factor in timber production, in conserving water resources, in building up local communities and in demonstrating methods of forest practice, and

*Whereas* the National Forests established by recent purchases in the eastern mountains are rendering a great public service, and

*Whereas* the lands already acquired comprise only a portion of the forest lands that should be owned by the public in these regions, be it

*Resolved*: That The American Forestry Association urge upon Congress the appropriation of adequate funds for the continuance of the purchase of forest lands under the Weeks Law.

#### FORESTS OF THE PUBLIC DOMAIN

*Whereas* there are large areas of forest lands chiefly in the west owned or controlled by the United States, which today are without adequate protection and management, be it

*Resolved*: That The American Forestry Association urge upon Congress that appropriate legislation be enacted for the incorporation of such areas in the system of National Forests.

#### SUPPORT OF RESEARCH

*Whereas* the establishment of an effective practice of forestry in this country depends upon a basic knowledge of the life and growth of our trees and the characteristics of their products, and

*Whereas* there are required for the acquirement of this knowledge both scientific research in the laboratory and field experimentation and demonstration, be it

*Resolved*: That The American Forestry Association urge upon Congress the necessity to provide increased financial support for the research work conducted by the Forest Service at the various Forest Experiment Stations and at the Forest Products Laboratory at Madison, Wisconsin.

#### TRANSFER OF FOREST SERVICE

*Whereas* the success of the federal work in forestry, in the administration of the National Forests, in building up the basis of practice of forestry on private lands throughout the country, and in research in forestry and forest utilization, would have been impossible without the centralization of all the work in a single technical bureau, and

*Whereas* the interests of forestry are inseparable from those of agriculture because more than 60 per cent of the forests in the long run will be in small ownership either attached to farms or interspersed among farms and because in a large part of the



country the development of forests and of agriculture must go hand in hand and are interdependent, and

*Whereas* there is a definite movement represented by bills in Congress and by various recommendations to Congress to transfer the Forest Service from the Department of Agriculture to the Interior or some other Department, and

*Whereas* such a step would inevitably lead to the division of the federal work of forestry among two or more departments with a consequent duplication, weakening of leadership, and lessening of the effectiveness of the work in many directions, be it

*Resolved:* That The American Forestry Association earnestly protests against the proposal to transfer the Forest Service or any portion of it from its present jurisdiction in the Department of Agriculture.

#### FOREST FIRES

*Whereas* the most serious agency of forest devastation is fire, and

*Whereas* we are not yet in control of forest fires, the annual amount of land burned each year reaching an aggregate of about 12,000,000 acres with direct annual loss of no less than \$17,000,000, and

*Whereas* security from forest fires can be attained only through the organization of protective work of all owners under a single system directed by the public, be it

*Resolved:* That The American Forestry Association urge upon the federal Congress and the legislatures of the states to make adequate appropriations for this basic feature of forestry work.

#### PINE BLISTER RUST

*Whereas* The American Forestry Association recognizes the grave menace to the extensive public and private five-needled pine forests of Western North America from the recent discovery of the white pine blister rust in the Puget Sound region of British Columbia and Washington, and

*Whereas* the white pine blister rust is generally established over a large area in Wisconsin and Minnesota and throughout

the white pine regions of the Northeastern States where it is increasing at a rapid rate, thereby menacing the continued production of white pine which is essential to the maintenance of the necessary timber supply and therefore to the welfare of the country, and

*Whereas* the deceptive character of the disease makes it imperative to arouse the owners of Eastern White Pine to this serious situation, to convince them of the immediate need for the general application of the demonstrated practical, effective and inexpensive control measures, in order to save the young pine crop and keep the forest lands productive; therefore be it

*Resolved:* That The American Forestry Association urge federal co-operation with the Dominion of Canada, States and others interested in safeguarding the five-needled pine forest resources of Western North America, in providing necessary funds and taking adequate measures to meet the emergency situation created by the discovery of the white pine blister rust in the Northwest; and be it further

*Resolved:* That this association urge that federal and state blister rust quarantine regulations be strictly enforced to prevent the introduction and establishment of this destructive disease in uninfected regions, and be it further

*Resolved:* That this Association urge adequate Federal and State appropriations for combatting the blister rust in the Northeastern and Lake States by instructing pine owners in the best methods of control through systematic personal contact and demonstration, thereby maintaining the continued commercial production of white pine in these regions.

#### INSECT CONTROL

*Whereas* the depredations by insects is one of the most serious causes of forest destruction; and

*Whereas* on the Pacific Coast there is one infestation which has destroyed within the last ten years timber aggregating in amount no less than 1,500,000,000 feet, valued at not less than \$4,500,000.00; and

### Financial Report of the American Forestry Association for 1921

#### ASSETS

Cash .....	\$24,543.20
Investments .....	25,271.00
Accrued Interest .....	1,169.23
Accounts Receivable .....	365.03
Stamps, etc. ....	368.00
	<hr/>
	\$51,716.46

#### EXPENSES FOR 1921

Magazine Production .....	\$43,042.53
Membership and Editorial Office .....	31,198.86
Membership Solicitation .....	10,168.54
Meetings and Legislative Campaigns .....	1,737.78
Educational and Publicity .....	11,016.69
Net Operating Profit .....	12,128.21
	<hr/>
	\$109,292.61
	<hr/>
Equipment Purchased .....	1,200.00
Excess Income over Expenses .....	12,615.93

#### LIABILITIES

Bonds Outstanding .....	\$10.00
Accounts Payable .....	6,424.27
Notes Payable .....	4,000.00
Subscriptions for 1922 Prepaid .....	10,170.95
Surplus .....	31,111.24
	<hr/>
	\$51,716.46

#### INCOME FOR 1921

Membership Dues and Circulation .....	\$58,074.46
Advertising .....	8,503.66
Book Sales, Net .....	870.88
Premiums, Net .....	17.33
Donations for Educational and Scientific Work Secured Through Efforts of Charles Lathrop Pack .....	41,826.28
	<hr/>
	\$109,292.61
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Net Operating Profit .....	12,128.21
Interest on Investments .....	1,355.84
Interest on Deposits .....	81.38
Interest on Horgan Bequest .....	250.50
	<hr/>
	\$13,815.93



*Whereas* other infestations are threatening American forests elsewhere, as, for example, the spruce-bud worm in the Northeast and pine borers at various points; and

*Whereas* no provision is made in the annual appropriations of Congress to meet this urgent situation, be it

*Resolved:* That The American Forestry Association urge upon Congress the necessity for giving consideration to this serious danger to the forests and to providing in the annual appropriation for the Forest Service and Bureau of Entomology, funds to meet this situation.

#### COMMENDING PRESIDENT HARDING

*Whereas* the President of the United States, in his excellent address before the National Agricultural Conference on Monday, January 23, emphasized the need of forestry and urged upon the farmer the importance of conserving and expanding the timber resources of the farm, be it

*Resolved:* That The American Forestry Association express its appreciation and commendation to the President for his interest and support of the forestry movement.

## GRAVES RETURNS TO YALE FORESTRY SCHOOL

IT has recently been announced that plans long under consideration by Dean James W. Toumey, of the Yale School of Forestry, are now consummated in the arrangement whereby Colonel Henry S. Graves, formerly Chief Forester of the United States, is to return to his former position as Dean to the School. Mr. Toumey desires to resume his more purely scientific work and Mr. Graves, in view of the widening opportunities afforded to the school by its recent developments, is returning enthusiastically to his old post.

Coming coincidentally with the announcement that a further substantial increase representing the income on a quarter of a million dollars has been added to the School's resources, and that three hundred thousand dollars has recently been received for the erection and maintenance of a School of Forestry building, the news that such a conspicuous forester as Mr. Graves has been called to the faculty of the Yale School will generally be regarded as significant. The fact that Mr. Graves recently declined an offer of the position of Conservation Commissioner of the State of New York on the ground that the Yale School of Forestry offer, then under consideration, promised the greatest field for the national educational work in connection with forests and other natural resources in which he has been engaged since his resignation from Government service, will also be regarded as a significant circumstance. It is believed that the national eminence and international reputation of Mr. Graves will bring a degree of prestige which will directly influence the future growth of the Yale School.

In this connection it is announced that the trustees of the estate of John W. Sterling have decided to establish in the University a fifth Sterling Professorship, to be known as the Sterling Professorship of Forestry. The first incumbent of this Sterling Professorship will be Professor Henry S. Graves, the Dean-elect of the School of Forestry.

Mr. Toumey, whose retirement as dean is a voluntary act, desires relief from executive duties in order to devote himself to more intensive work in silviculture. He has been connected with the Yale School of Forestry since its foundation in 1900, when he became Assistant Professor of Forestry. He was advanced to full professorial rank in 1903, and was assigned to the

Morris K. Jesup Professorship of Silviculture when this chair was established in 1909. It is an interesting fact that Mr. Graves was the first Director of the School of Forestry, and retained that position until 1909. Mr. Toumey was Acting Director during the years 1909-1911, since when he has served as the administrative head of the school. Under Dean Toumey Yale's youngest school has attained marked success, extending its educational scope, adding to its equipment, sending its graduates into every form of service in the widening field of forestry. No other school of Yale University has enjoyed a more remarkable development than has the School of Forestry under the administration of Dean Toumey.

The new Yale Dean of Forestry was one of the pioneers in the forestry movement. He first came into prominence during the period of his office as Director of the Yale School of Forestry. In 1910 he was selected by President Taft to succeed Gifford Pinchot as Chief Forester in charge of the Forest Service in the United States Department of Agriculture. Later, in 1920, he resigned to devote himself to the private practice of forestry, opening offices in Washington, D. C.

In 1917 Mr. Graves was commissioned a major in the Corps of Engineers and was sent to France to prepare for the work of the forestry troops then being organized to operate the French forests for the purpose of securing lumber and other material needed for the American Army. He was later promoted to a Lieutenant Colonelcy in the Tenth Engineers.

Mr. Graves is a member of the board of management of the Washington Academy of Sciences, vice-president of the Section of Social Economic Sciences of the American Association for the Advancement of Science, a member of the Division of States Relations in the National Research Council, a member of the Joint Committee on Natural Resources of the National Academy of Science, National Research Council and the American Forestry Association, an honorary member of the Royal English and the Royal Scottish Arboricultural Societies, a member of the Societe Forestiere de Franche Comte d'Belfort, member of the Society of American Military Engineers, and a member and officer in numerous societies and organizations for the advancement of forestry and kindred subjects.



# PINE ROOTS AND POTATOES

By Arthur Newton Pack

**T**HERE was once a time before the war when cheap German grown potatoes could be bought in the markets of New York, Philadelphia and other Atlantic points for less than it cost to produce the American spud; but we need not worry about its occurring again. Just now the German potato is very much needed at home. Prior to 1914, Germany was seldom able to produce more than 60 per cent of her entire food requirements, and indeed

distresses of the people. Most of the towns and cities of Germany own their own wood lots dating back for five or six centuries, and they usually operate them through state or municipal agencies on the principle of a tree for a tree. It was not always so, for Germany once almost completely exhausted her forests. So terrific was the lesson that even the greatest war of history has never wiped it from the minds of the people. As

the government had no mind to permit the destruction of the forests during the past war, and thus involve the nation in a future problem far more serious, wood fuel soon took a prominent place upon the list of daily necessities rationed out.

The municipal forests, more carefully guarded than ever, stood between the nation and famine. In the beech wood lots, even the nuts, for there was a very large crop during 1916-17 and 18, were gathered and, because of their oily contents, used in place of lamps and candles in the homes. In the pine forests, when an area was cut for fuel, even the stumps and roots were tipped out and split up to supplement the supply. Then, immediately an area was cleared, the ground was ploughed or dug up by hand and sown with alternate rows of pine seed and potatoes. Two or three

crops of potatoes could be obtained from the land before the trees became large enough to interfere. Although her nitrates had largely been re-allocated from agricultural to war-time purposes, one thing that Germany did have was fertilizing material. Of course, now the war



TRUNK, ROOT AND BRANCHES

Here is a pile of corded pine to be rationed out by the governmental authorities. All small sizes are used so that no available fuel wood is lost.

there were many who felt that starvation would force her to end the great war long before she did. It will always remain a miracle as to how her people managed to subsist during those four lean years of war, and the fact that they did not die in hundreds of thousands is only attributable to Germany's marvelous efficiency in the development and distribution of such food as she was able to produce or smuggle in. In many parts of the country, the potato was during that time almost the sole article of diet, and every square foot of space which could be made available for truck farming was put to work.

Coal was always scarce in Germany, and the struggle for the possession of the regions where it might be found undoubtedly figured largely in her plan of imperial domination. Nearly all her home heating and cooking was by means of wood fires. During the war even the meager supply of coal available for home consumption was commandeered for army and munition manufacturing purposes, and for all the forests, a fuel famine was added to the other

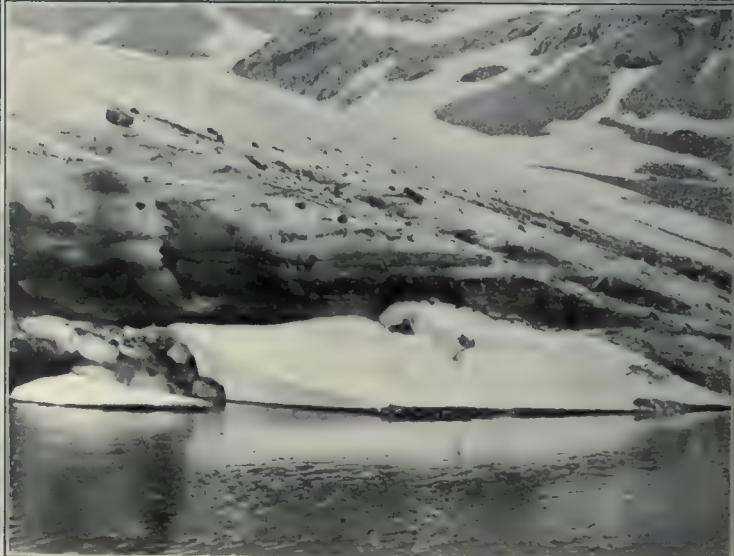
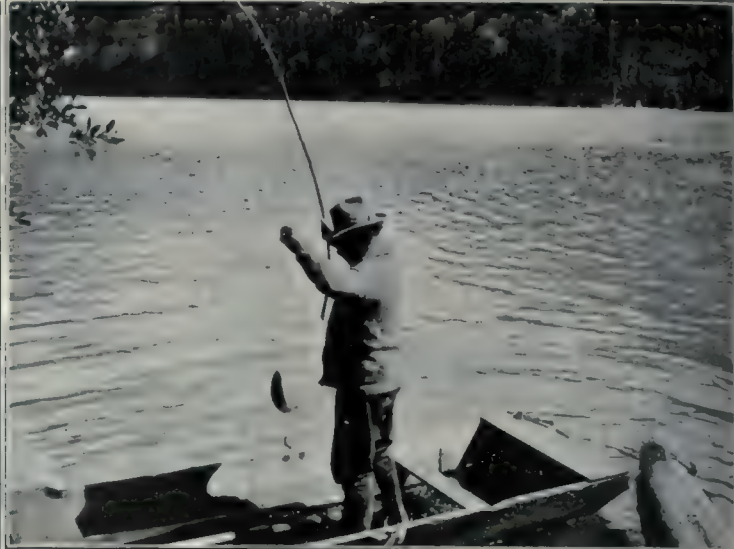


FOOD AND FUEL FROM THE SAME FIELD

Two years ago this was a city wood lot; twenty years hence it will again be producing fuel. But in the meantime, successive crops of potatoes will alleviate the food famine.

(Continued on page 178.)





#### WHAT YOU CAN DO — AND

*Upper*—How "Cloudy Pass" gets its name.

*Middle*—The author does a successful stunt with a flapjack.

*Lower*—View looking south from Cloudy Pass trail.

#### WHAT YOU CAN SEE

*Upper*—Catching a native trout in Hart Lake.

*Middle*—A woodland cottage on Lake Chelan.

*Lower*—The snout of Lyman Glacier, where flows a river.



# WITH THE GRAPHLEX IN CHELAN

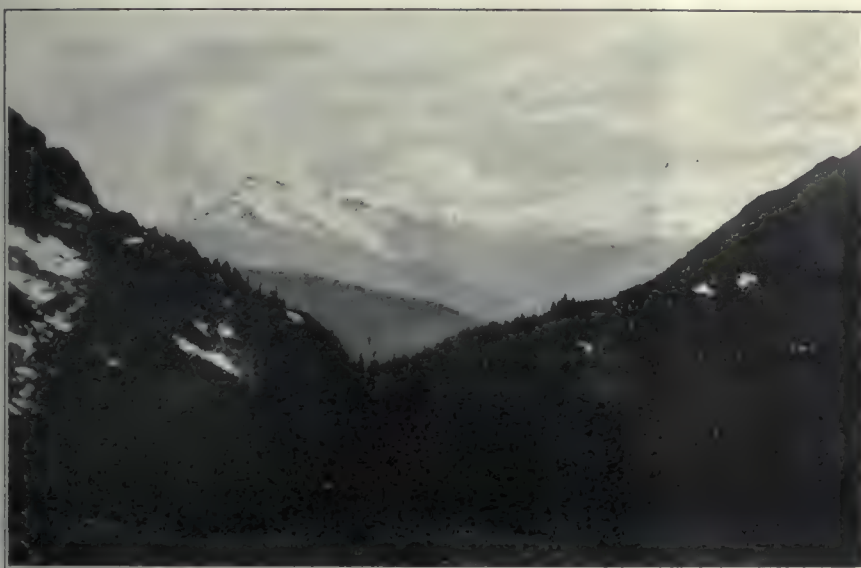
By C. J. Blanchard

(WITH PHOTOGRAPHS BY THE AUTHOR)

"**D**RAT that pup," exclaimed the Englishman, "if he don't quit that infernal howling I'm going to tie him to a waterfall and drown him." Quite unmindful of this dire threat the pup continued to voice his rage loudly at some mysterious animal which, securely entrenched on a narrow ledge above the camp, was tormenting his enemy by whistling shrilly. Sleep being out of the question, we crawled from under the

and brown in bacon fat no epicure ever dined more sumptuously.

With movie camera securely strapped to the pack horse we climbed into our saddles and started west to ascend the mountain. Our objective was Lyman Glacier, now gleaming white in the morning sunshine. With frequent stops to admire and photograph the charming views enroute we reached the moraine. Spellbound, we gazed upon this wonderful spectacle. Above our heads was a perpendicular wall of green ice fifty feet high, sloping back for more than two miles to the bare face of the mountain. Resting in its cirque Lyman Glacier is a huge block of ice five miles in circumference, and perhaps hundreds of feet in depth. The prodigality of nature in her ice making impressed us as utterly wasteful, and the thought came how much



THE TOP OF THE WORLD

Near the summit of Cloudy Pass. Magnificent scenery abounds in this unsurpassed vacation country.

blankets and came forth into the chilly mountain air.

It was such a morning in August as only those who dwell in the mountains enjoy. The air was a tonic, crisp, laden with the odor of pine and balsam, and cooled by the ice and snow of innumerable glaciers all about us. The sun had not yet climbed the range on the East, and the tiny valley on the shore of Lyman Lake was in soft shadows. Save for the dog and the marmot on the cliffs all was silence. The forest ranger and guide moved noiselessly about his task of making the fire, the others busied themselves about the camp, while the writer strode to the outlet of the lake, where a swift stream tumbled into the valley. With hook baited with a single salmon egg, each cast lured a half pound native trout to shore and the frying pan. Fried crisp



ON THE SHORE OF LAKE CHELAN

Switzerland offers nothing more beautiful than this lake, deep bosomed in the heart of the Cascades.



better had it been if this great mass of coolness could have been manufactured near New York. From the snout of the glacier we penetrated a large cavern for fifty feet or more until the sharp cracking drove us precipitately out into the sunshine.

Dividing our photographic impedimenta equally among the party we started on our walk over the surface of the glacier and headed for the pass, a semi-circular notch in the mountain. Our guide in advance carefully picked the trail, avoiding crevasses and hidden pits full of melted snow. As we approached the northern edge of the glacier we stopped to film several hanging glaciers set in circular depressions and apparently held in place by ridges of rocks at the lower edge. Suddenly without warning an enormous mass of ice broke off from one of the glaciers, and loosening the rocks below started a veritable avalanche. Immense boulders sprang straight out from these ridges, and dropping from cliff to cliff



A READY MADE FOREST SERVICE CAMP

This is one of the camps the Service supplies for the benefit of visitors. Trout caught just ten feet away from the stove are being fried for dinner.

swiftly sped downward to the ice upon which we stood. So great was the impetus that many were carried beyond us, and one reached the leg of the tripod of the moving camera. We gathered up our belongings and beat a very hasty retreat to safety. For an hour or more the downpour of rocks continued with deafening roar. With the passing around of the sun the cool air soon stopped the melting of ice and quiet was once more restored. From time to time we encountered great crevasses of unknown depths. Far down in these we heard the sound of the rushing waters which contribute to the powerful stream emerging through the cavern in the glacier's snout. A misstep and that would be the end. Pressing on we reached the summit and glimpsed for the first time the western slope of the Cascades. The view was inspiring and beautiful. Immense forests, vistas of plains and valleys unfolded to our delighted vision.



A GLIMPSE OF THE WONDERFUL SCENIC COUNTRY

Every true nature lover will enthuse over a trip to the Chelan country.

Back to the camp we came for another night of soothing sleep on beds of pine boughs. With lusty appetites we devoured a tasty "mulligan," the delectable concoction of the Forest Service man.

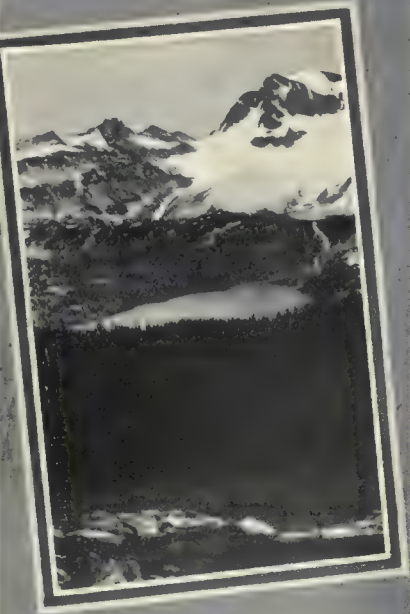
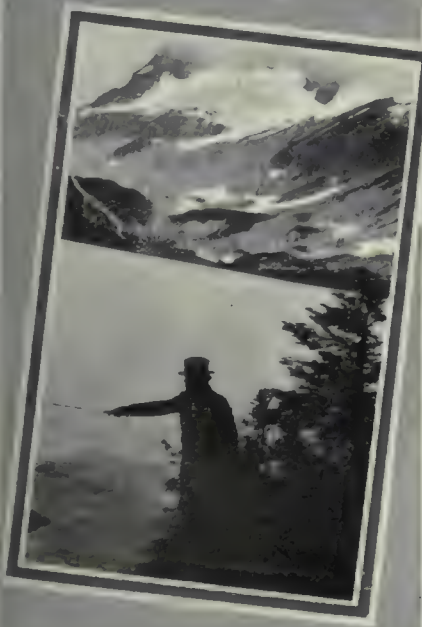
Another day dawned and we left camp for Cloudy Pass. The scenery was magnificent every foot of the way. Half way up we stopped to rest the horses and chat with a couple of miners digging out thin sheets of



BREAKING CAMP FOR THE HOMEWARD TRIP

A driving storm blowing up the pass hastened our return to the valley.





#### JUST BITS ALONG THE WAY

First—our good ship Ranger, the Forest Service boat; then Terrace Falls, above Lyman Lake, one of the most beautiful of the many waterfalls of the Chelan country; the movie outfit and pack horse; filming a hanging glacier from Lyman Glacier; the pup who finally had revenge; returning to camp across Lyman Glacier; early morning on Lyman Lake, trying "fisherman's luck;" the stop for lunch at the mine, and looking back one sees the lovely valley where we camped and distant Hart Lake beyond nestling between granite mountains, and finally Lyman Lake, with Crooked Falls lying between it and Glacier Lake, and Lyman Glacier and Pass.



almost pure molybdenum. A hospitable cook had only to suggest once that we tie up for lunch.

Just above the mine is located one of the most impressive waterfalls we have ever seen. We ventured to call it Terrace Falls. The photograph does not do justice to it. From the camp the falls appear to spring boldly out from the cliff, the face of which is indented by a series of irregular shelves or terraces over which the water is dashed into foam and spume. The entire drop must be fully a thousand feet and the volume is quite large.

From this point a backward look showed us the tiny valley wherein we had camped and distant Hart Lake beyond nestling between granite mountains.

Cloudy Pass, reached over a Forest Service trail, offered no great obstacles except at one spot where a fallen tree held us up until the ax had cleared the way.

The attainment of the summit was too easy for what we found there. We would have been willing to pay for the sight which met our eye by strenuous labor had payment been required. The view was by far the finest on our trip. Lofty mountain ranges topped by peaks soaring into the clouds snow tipped, dressed in glaciers, deep canyons through which we looked out upon wide valley and plain and forest spread out before us. Here was in

truth the top of the world, a world of light and color and beauty indescribable. Before our eyes had grown satisfied with the view a driving snowstorm blew up the pass and hastened our return to the valley.

Early the following day we started back to Lucerne, on the shores of Lake Chelan. Reaching our destination early that evening we loaded our equipment on the good launch Ranger and headed for Chelan and civilization again.

Our exploration of Chelan and its wonders will keep for another time. Because I know every true nature lover will want to make a trip to Lyman Glacier I'm going to tell you how to do it.

To reach Chelan on the lake you travel by rail to the station at Chelan, Washington, where the auto bus meets you for Chelan. Take a boat here for Lucerne on the lake. Here pack horses and guides are obtainable and camp outfits are provided. From Lucerne your route will be on an abandoned railway grade up Railway creek to Hart Lake, and thence over the forest trail to Lyman Glacier and Cloudy Pass. No hardships will be met, the mileage is not great, but the ever-varying scenery, much of which approaches the sublime, contributes to make the trip one of enduring memory.

## PINE ROOTS AND POTATOES

(Continued from page 173.)

is over, Germany can theoretically once more obtain food from the outside world, but the depreciation of the Mark has made it very difficult for her to import any quantity, and only the wealthiest can afford the luxury of an all round diet. The poor still subsist upon potatoes, and row upon row may still be seen growing along with pine seedlings on the cut-over patches.

There are some in America who think that forestry and agriculture are so widely divergent as to make it advisable to divorce them, and place them under separate governmental departments. Yet the nearer we come to the enforced practice of forest conservation, such as

has been the long established feature of continental European nations, the more we are obliged to recognize the close relation between the two sciences. In practically every nation on the earth wherever agriculture and forestry are both extensively practiced, both are regarded as a phase of agriculture, and both farms and forests are centralized under a single department. Among the wood-using industries of America, sentiment is turning more and more toward forest conservation and growth. Practical intensive forestry on a commercial basis is for us not very far ahead, and no section of the American people will be more affected thereby than the farmers of the country.

## MATCH MAKING

Many types of machinery are used for match making. To produce the matches, the boxes into which they are packed and the labeling of boxes requires a very ingenious mechanism. There must be machines for cutting the lumber into strips and small blocks, for dipping the sticks, drying the matches, and packing and labeling the boxes. Wood for the production of matches and match splints must be easily worked and capable of producing a moderate flame and must also have the capacity of holding and dipping material well. The United States is the only country in the world which makes and uses a round match. For this purpose white pine is used in great quantities. The industry calls for 2-inch boards or deals of clear stock free from all defects.

The soft wood of clear white pine is necessary for this process because the machines in common practice punch the sticks from blocks of the proper length. The square matches of the "safety" type, which are commonly used throughout foreign countries, and to an increasing extent in the United States, are made by turning logs into veneer and chopping the veneer into suitable sizes for the splints. Basswood and aspen are the species mainly employed. While the United States produces its own square matches to some extent, over 5,000,000 gross of boxes are imported annually. Spruce veneer is used in the manufacture of the paper-covered wooden boxes.—*Daily Bulletin, Southwestern District, U. S. Forest Service.*



## COLONEL GRAVES ON THE SNELL BILL

**C**OL. HENRY S. GRAVES, former chief of the United States Forest Service, who was invited by the Agricultural Committee to give his views on a national forest policy during the hearings on the Snell forestry bill, gave evidence at length to the members of the committee. He made, in addition to answering the questions of the committee, the following statements:

"The accomplishments in forestry which we already have secured have been so far largely the result of public effort. That is very proper because the public must first of all provide for the right handling of the forest properties which it owns itself, setting an example for other owners, and the public has certain responsibilities in taking such action as is essential to remove some of the obstacles which are very real in the way of the practice of forestry on private lands. Private owners in many places have cooperated with the Government and the States in these public efforts. In some places they have not lent such cooperation, and forestry has been to that extent retarded on the public side.

"You have now been told that the public should go a great deal further and should embark on a broad policy which will really reach some phases of working out the forest problem which we have hardly touched, and to make the entire undertaking more effective all along the line, and some of the features of public effort which are being advocated are primarily for public purposes, quite regardless of their relation to private forests. Some of these are included in the measure before you. I refer, for example, to the extension of the national forests, extensions to include larger areas that are now in the public domain, and their extension through purchase. I refer to such measures as would increase the efficiency of the Government in its own work, assistance to the states in primary public measures. Some of these measures which are advocated and have to do primarily with public efforts without reference to private purchases will have a very great bearing on the question of private policy, as for instance the public forests will have a large influence on the practicability of private forestry in this vicinity, through centers of cooperation and fire protection, through demonstrations of methods and in other ways.

"We propose to go still further and undertake to work out some method by which our private forests can be better handled, will be perpetuated and will in the long run render the service which is essential.

"The problem of forestry cannot be passed up entirely to the public. Even if we have a very ambitious program of public forests we still have got to rely very largely on private forests for our timber supply and for other service of the forests. I presume that today not over 5 per cent of the lumber on the market comes from the public forests. The rest comes from the private forests. As time goes on this ratio will change, but there always will be a very considerable part of the

material used by our country that comes from the forests which will have to be derived from private lands.

"While there is a good deal of difference of opinion as to the exact steps which you can take to bring about the better practice of forestry on private lands, I believe every one is agreed—all are agreed—that it is going to require a broad and liberal policy on the part of the public to work out any comprehensive and practical program.

"Any program is going to involve a lot of public money on the part of the Federal Government and on the part of the States. I believe such expenditures are necessary and are justified by the magnitude of the interests involved, but the public, in my opinion, is not going to appropriate those moneys unless they have a clear understanding of the reasons why they are essential, an understanding of what returns, public returns are expected, and a definite assurance that the actual objects will be accomplished in practice.

"I do not think that the Snell bill gives that definite assurance. This, like other methods, calls for a large program and large expenditures of public money, and this measure, (if this plan were adopted) or any other measure, if it is going to have the practical backing of the country sufficient to warrant the expenditure of funds from the public treasury, has got to have the assurance that forestry is going to be carried on on private lands to the extent that measures will be adopted which will fully safeguard the public interests. It is for that reason that if this measure is to be adopted, in my opinion there should be injected into it an entirely different viewpoint regarding the requirements of the private owner than I read into the language.

"I have approached this question of a national forest policy which would include the private forest problem from a somewhat different angle than Mr. Pinchot. I have approached it from the standpoint of utilizing our State machinery already in existence in a good many of our States, and using State authority for carrying out necessary measures in securing a sound system of taxation, and using the State's police power in imposing such requirements upon private owners as may be necessary in carrying out such a program.

"The ideas that I had worked out while I was in charge of the Forest Service are similar in this general framework to the bill before you. The first two sections of the bill which relate to the private lands do not, however, in my opinion, give the assurance of the practice of forestry which would justify the large expenditures called for, or enable one to give assurance to the public that the results aimed at by this measure will be secured.

"The requirements of what the private owners have to do, of course, differ under different conditions, but the point is that under this legislation there would be a great many owners who would not use the methods which are essential for adequate protection of the forests or for adequate perpetuation, and my idea is that they should be



all brought under the same system, and that they should be controlled through the State authority.

"If we use the basis of this bill and substitute for this general, rather vague language in the first two sections, a really mandatory provision, the State which failed to enforce the regulations on private individuals would also fail to receive the cooperation of the Government.

"I would not at all minimize the fact that in the timber exporting States sentiment in favor of really getting down to the practical practice of forestry on private lands and the imposing of regulations through State authorities on private owners is exceedingly small. I am candid to confess that during the past year I have been greatly disappointed in the reading of the accounts of those who have been promoting this measure; that that feature of the plan looking to real effective legislation on the part of the States has been not emphasized, or so glossed over as to give the impression that this measure is not one which looks to requirements by a State on the part of owners to do what I believe to be essential, to perpetuate their forests, but that it is rather a measure looking to public cooperation, education and encouragement."

In answer to a direct question, Mr. Graves said:

"I am opposed to the Snell bill as it reads today. I would like to read a tentative draft of what I would consider as an effective bill under this general plan. Substitute for paragraphs 1 and 2 of the Snell bill the following:

"That the Secretary of Agriculture, through the Forest Service, is hereby authorized and directed, in cooperation with the appropriate officials of the various States, or other suitable agencies, to determine for each forest region of the United States the essential requirements in protecting timber and cut-over lands from fire and proper methods of forestry."

"The idea of this is to make the expenditure on the part of the Federal Government in this cooperation which is proposed in this bill contingent upon the States putting into effect mandatory legislation.

"I have a few objections to Mr. Pinchot's proposal, or the Capper bill. Briefly they are these: I think in the first place it looks too exclusively to the big timber land owners, and to the big lumber operations, and does not provide sufficiently for the great areas of second growth and cut-over lands, and lands in small ownership. The old timber is going pretty fast; the actual number of owners of it is comparatively small—I presume not over about two thousand of the really large tracts of timber lands; the bulk of our forests are already today of the character of second growth and cut-over lands, and I do not see that the Capper bill is looking sufficiently—provides sufficiently for the requirements on the part of the public for the handling of that class of land. I do not think that that bill—and certainly not this measure before you—sufficiently provides for the great service—considers, rather, the great service—of the forests in the development of the sections of the country where the forests are located. In fact, at the end of Section

1 it uses this expression, referring to the methods of forestation which should be used: 'Favorable forest protection and renewal, with a view to furnishing a continuous supply of timber for the use and needs of the people of the United States.'

"That is only one service of the forest and one purpose of this whole proposition. We have got a great land problem which concerns nearly a third of the area of the country, and the way the forests are handled upon it is going to have a profound influence on the development of the region and on the maintenance of local industries and the building up of agriculture and an industrial structure in the rural communities, and I do not think that the Capper bill gives sufficient consideration to that viewpoint, because it is apparently aimed too exclusively toward the problem of the large timber tract and the large lumberman.

"The third point is the one I have just mentioned, that it is to distinguish between fire protection, which it presumes will be handled by the State, and silviculture, which is going to be primarily a requirement of the Government. I think that if you have a Federal law which deals directly with the private owner, the question of the requirement of fire protection and the requirements for cutting, whatever those may be, should go together.

"And finally, I think any Federal law of that kind is likely in the long run to tend to reduce the responsibilities—speaking of responsibility on the part of the individual States. I think any strong, permanent policy of forestry should place the largest burden, the largest responsibility, down the line; have the States doing their part, making their appropriations, and assuming their responsibilities in every direction, but if you place the control of this feature of private lands on the Government I do believe there is going to be a tendency for the States to feel that the Government is assuming the responsibility and they can also assume the burden, exactly as in some cases there has been a tendency here and there in the operation of the Weeks law—I mean the portion of the Weeks law dealing with cooperation for fire protection—for individual States to assume that they can either reduce or fail to make the increased appropriations for fire protection because of the Government appropriations.

"And finally, I think that the responsibility on the part of the individual in this whole thing should be emphasized. I do not know that this proposal I have made would do more than the Capper bill. I would like to say with reference to the Capper bill, with entire candor, that if a bill of this kind or a measure of this kind is going to continue to receive, or fail to receive, the backing of those interested in bringing about a national forest program, so far as the insistence on a full carrying out of the right methods on private lands by the owners is concerned, if it continues to fail to receive the backing of really effective State legislation, I for one shall consider that it is not going to be possible to carry it through."



# STREET SHADE TREES--BEFORE AND AFTER

By W. R. Mattoon



APPARENT DESECRATION, WHICH

Appearance of the sycamore trees along Eleventh street, after the first season of growth following their severe heading-back. The foliage during this first season had looked decidedly scraggy. (Photograph taken in January, 1921.)

**T**HE progress of a very successful operation in trimming street trees is shown in the accompanying photographs. Eleventh Street, N. W., Washington, D. C., is lined with native American sycamores, or button-balls. They were planted probably about 50 years ago and by 1919 had become so large as to shut out much sunlight and air from the residences. Their appearance was irregular, as some trees had outstripped their neighbors. Some idea of their former size may be had by noting the main trunks and stubs in one of the accompanying figures.

The District authorities severely headed-back the trees in the early spring of 1920, and a vigorous protest went up from some of the property owners and various other residents of Washington, who thought the beauty of this prominent street had been forever spoiled. In reply,

they were told to be patient for a little and all would be well.

The correctness of the prediction is here well illustrated. During the first growing season (1920) the trees sent out numerous sprouts which, however, did not make much of a showing or give much promise of what might be expected. In one of the accompanying figures is shown the appearance of a portion of Eleventh street at the end of the second season of growth following the trimming. The picture also gives a good idea of the shape of the individual trees.

More beautiful rows of street trees than those which now decorate Eleventh street could hardly be found. The trees are symmetrical in shape and strikingly uniform in size, and the residents are happy in living on a street lined with some of the most beautiful trees in the city.



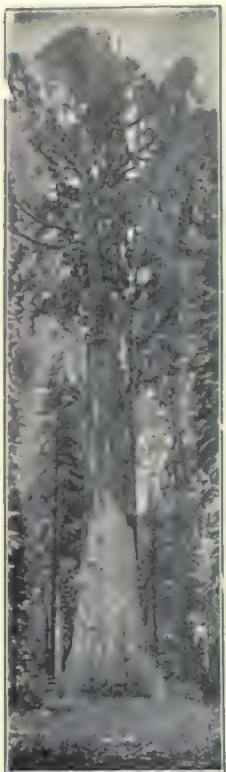
PROVED TO BE SALVATION TO THE OLD SYCAMORES

Eleventh street as it appeared toward the close of the second season following the trimming. Rows of trees of striking symmetry of outline and uniformity of size line both sides of the street and make this one of the most attractive and beautiful streets of Washington. (Photograph taken in early October, 1921.)



## CANADIAN DEPARTMENT

Ellwood Wilson.



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The usual annual meetings of The Canadian Pulp and Paper Association, and its various sections, and the various Associations federated in the Quebec Forest Protective Association were held in Montreal during the week of January 23rd. While not a great deal was done at these meetings the subjects discussed and the action taken was probably the most important in many years. The general meeting of the Pulp and Paper Association voted the money necessary to finish the textbooks of pulp and paper making, to study a system of admitting apprentices to the mills for training and appointed two men to meet with a like number from the Quebec Limit Holders Association and arrange with the Minister of Lands and Forests of Quebec for an advisory committee to meet with him at stated times during the year for the discussion of any proposed legislation or change in the policy or regulations of his department. This is bringing Quebec into line with New Brunswick and British Columbia, both of which Provinces have derived great benefit from such co-operation between the Government and the wood using industries. It is expected that Ontario will soon announce the formation of such a committee for that Province.

At the meetings of the Woodlands Section, it was decided to ask the executive council for a secretary who would also be a trained mechanical engineer and who would investigate new or improved logging methods, visit regions where such are being carried out, report on their feasibility and success, their costs and adaptability to Canadian conditions and distribute such information to the companies represented in the section. He would also act in an advisory capacity to the various logging departments of the companies. Such information would be most practical and valuable and would help to standardize operations and also woods cost-accounting. It was also decided to appoint a new committee to continue the study of a scheme for a ranger-school for the pulp and paper industry where men could receive training for subordinate woods positions. It was decided also to co-operate as closely as possible with the Woodlands Section of the American Pulp and Paper Association. Messrs. Power and McLaughlin read papers on lumbering problems, and Mr. G. C. Piche read a paper and his observations made during a trip to Sweden last summer, when he accompanied Mr. Edward Beck, secretary of the Canadian Pulp and Paper Association.

A very interesting paper was read at the meeting of the Technical Section on the

use of jack pine in the manufacture of sulphite pulp. There are quite large areas of this species in Quebec and Ontario and these are increasing as a consequence of forest fires. Heretofore this wood has been used only for lumber, ties and sulfate pulp and it was thought unsuitable for sulfite. Mr. Neilson's experiments, however, show that it is perfectly feasible and economically possible to use it in the manufacture of newsprint, and as it occurs alongside of stands of spruce and fir, it will somewhat cheapen logging operations to bring all of the different species out in one logging operation and will also increase the amount of wood suitable for the manufacture of newsprint. In the past the paper makers have often blamed many of their troubles on this species, but Mr. Neilson shows that many of these troubles occur when it is not being used at all.

At the annual meeting of the Quebec Forest Protective Association papers were read on the ravages of the spruce budworm which is said to have caused a loss of at least 50,000,000 cords of pulp-wood in the Province of Quebec. On the use of aircraft in forest surveys and on the forest fire record of the past season. It was shown that the railroads had caused far less damage than in any previous year. Mr. Kingsland, manager of Eastern Lines for the Canadian National Railways, made the statement that he would do all in his power to prevent the lines under his direction from setting forest fires.

The Quebec Government is introducing additional fire legislation at the present session, which should help in fire protection. The most important item is a requirement that all persons entering upon Crown lands under license must secure a permit from the local fire-ranger. This will be issued without cost and will entail as little trouble as possible. The idea is to have a check on people traveling in the woods and if they know that the fire ranger is aware of their presence it is only logical to expect that they will be more careful as fires can be traced to them. There is, unfortunately, a strong probability that this clause will not pass. Another section provides for the establishment of a Government fire-ranger in each parish or municipality near a forested area, who will issue permits for slash burning or to those who wish to enter the woods, and will have charge of fire-fighting operations. It is also proposed that anyone building or clearing new public roads shall clear up all debris on either side for a distance of 100 feet and burn it in the right of way. That fire fighters shall have the right to enter on or cross over all lands in the discharge of their duties. Legislation will also be





# DISSTON

## NEWS FOR LUMBERMEN



Published Occasionally

HENRY DISSTON &amp; SONS, Inc., PHILADELPHIA, U. S. A.

March, 1922

### Disston Saw-Makers for 256 Years

WHEN one considers there is no trade which requires more skill and personal judgment than saw-mak-

and they always strive with jealous care, as do also the younger saw-makers, to maintain the quality and work-



Three Brothers—John, George and James Arnold—and Their Sons Have Been Disston Saw-Makers for an Aggregate of 256 Years

ing, the old saying, "that it takes seven years to make a saw-maker," seems well founded. Even after seven years of careful training and practical experience, there frequently arise problems and conditions which only skill and mature judgment can master.

In the Arnold families we have nine men who have plied the saw-making trade for the House of Disston more than twice the stipulated seven years, with the exception of the youngest Arnold, and he has passed his eleventh year at the trade. (One of the Arnold men was not present when above picture was made.)

The length of service of these men ranges from 11 years to 53 years—an average of 28½ years.

The Arnold family is only one of the many Disston families, and only a few of the hundreds of Disston mechanics who have from ten to sixty years to their credit at the saw-making trade.

Visitors who have been through the plant were impressed with the many grey-haired men in every department, and also with the intense interest these men take in their work.

These men started in youth to make saws and have worked at their trade, honestly and intelligently ever since,

manship which has made Disston Saws the standard of the industry for the past 81 years.

### They Say--

IN our office there is a correspondence file which we call our "inspiration file." Here we keep letters that are written to us by users of Disston Saws, Tools and Files. The following sentences are from a few of the letters taken at random from this collection:

"I use a Disston Saw that my father bought in 1887 and used to build the first house in White-wood, S. D."—"I have two of your saws that I have used approximately 4500 working days. I have filed them down to less than 1-4 inch at the point, but the temper is the same as when new."—"I sent to Europe for the best saw they could get, and when it came back it had 'Henry Disston & Sons' on the blade. Then I laughed."—"I have one of your cross-cut saws which has been in almost constant service since 1860, and it is today a perfect tool."—"I have one of your saws that is older than I am—46 years. My father had it before me. It is a good tool yet."—"The saws you made for us are giving great satisfaction, cutting more and better lumber than any other saws we have used."

It is indeed an inspiration to us, who are working to maintain and increase the reputation of the House of Disston for superior quality and workmanship, to know that our products are giving this unusual satisfaction to users in every part of the world.

### A Magazine You Should Read!

THERE is a magazine, different from all others, published especially for lumbermen. It will be sent free of charge to you if you would like it. It contains stories of timberland and operations in other countries. There are stories about fires, about filers and sawyers, about big mills and little mills. There are articles on the care of saws—articles prepared by experts from our factory. There is always a page of rattling good jokes. This little magazine, The Disston Crucible, is widely known and quoted. It is mailed to over sixteen thousand persons, and we have received enough compliments from them to feel that

you would like it and find some valuable information in it. If you would care to receive the Crucible please fill out and mail the attached coupon

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introduced to give a bonus to anyone planting trees, but anyone accepting the bonus will automatically place his lands under the direction of the Provincial Forest Service and will not be allowed to thin or cut his timber without its consent.

A meeting of the foresters of six of the large pulp and paper companies of Quebec was held to discuss a general policy for the forests under license, their report was submitted to the managers of the companies who presented it to the Premier and Minister of Lands, after it had been discussed with the Chief Forester. The Government admitted its general application and agreed that if the companies' foresters would submit working plans to the Chief Forester covering a period of ten years and these were approved by him, it would grant permission to carry them out. This will make for closer co-operation and will stabilize logging conditions and do away with the yearly irritation of fines for cutting under-sized trees.

The Spanish River Pulp and Paper Company, Ltd., expect to make a survey

of about 1,000 square miles of their limits this summer by aerial photography using a new twin-engined hydroplane designed by the Dayton-Wright Company especially for this work. The results will be looked forward to with much interest.

The past season the Laurentide Company Air Service photographed about 100 square miles and from the photos the areas in the different types of timber have been mapped, also blow-downs, barren areas, second growth and water. The areas are a great deal more accurate than the old-fashioned strip method and the sections where sample plots are to be located are already picked out and on these the timber will be measured shortly and the averages applied to the respective areas. A good general idea of the amount of timber on the area has already been obtained by using averages in areas situated in the general region.

At the annual meeting of the Canadian Forestry Association, Dan McLaughlin, of Arnprior, Ontario, was elected president and R. H. Campbell, director Dominion Forestry Branch, vice-president.

L. M. Ellis, director of forestry for New Zealand, has just issued his annual report for 1921. He says that today New Zealand is in the period of its third forestry "boom" but that whereas the other two accomplished very little this one has come to stay. The forestry department now has 6,800,000 acres in its charge and has made extensive studies and surveys. The saw mill and wood using industries have also been carefully investigated.

The next session of the Ontario Legislature is expected to pass legislation which will greatly improve forestry conditions.

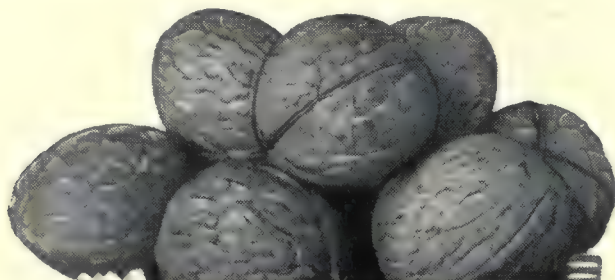
The Chief Forester of Ontario says that only twenty years' supply of virgin pine remains in that Province.

Ellwood Wilson, forester of the Laurentide Company, Ltd., has been elected a life member of the Royal Scottish Arboricultural Society.

### FOREST PRODUCTS LABORATORY APPROPRIATION

In behalf of a larger appropriation for the support of the Forest Products Laboratory the representatives of the lumber and wood using industries appeared before a sub-committee of the House Appropriations Committee on February 6 to urge favorable consideration by Congress upon an increase of \$100,000 in the funds to be devoted to the operation of the laboratory.

The National Lumber Manufacturers Association joined in this hearing, as it has taken a leading part during the last several years, urging more adequate financing provisions for the laboratory's activities.



## ENGLISH WALNUTS

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### HICKORY IN DEMAND

Hickory timber, although held in seemingly vast amount by the forests of the country, may soon become insufficient to meet American manufacturing and wood-working needs. The increasing demand for this valuable species, together with the scattered character of its growth in the forest, has resulted in merchantable stands becoming more and more inaccessible and difficult to log.

The Forest Service, United States Department of Agriculture, puts the country's present supply of hickory, distributed through 200,000,000 acres of forests, at 15,784,000,000 board feet. Of this the Central States have 6,791,000,000 feet, the lower Mississippi States 5,171,000,000 feet, the South Atlantic and East Gulf States 3,183,000,000 feet, the Middle Atlantic States, 412,000,000 board feet, the Lake State 187,000,000 feet, and the New England States 40,000,000 feet.

One of the uses to which hickory is put is in the manufacture of spokes for automobile wheels. The yearly demand upon the hickory reserves by this industry alone is tremendous, as there is much waste in getting the select stock necessary not only for spokes but also the rims of wheels.

For the most part vehicle and agricultural implement industries compete with the handle industry for hickory and ash. These are located mainly in the Middle West, but now derive most of their wood supplies from the South. A large number of far-sighted organizations purchased more or less extensive hardwood tracts some years ago, from which they are now able to draw at least a part of their wood supplies. To secure hickory, which grows scatteringly over large areas, the vehicle and agricultural-implement industries originally maintained extensive buying, logging, and milling organizations in the South. They draw upon every conceivable source—farmers woodlots, small mills, large sawmills, and even specialized operations designed to secure hickory alone. These concerns in general carry in stock about a two years' supply of special-dimension stock.

Makers of automobile wheels say that they can still get the material required if they make sufficient effort and pay the price, but it is necessary to go farther and farther away for it. Many inquiries received by the Forest Service from vehicle implement makers, requesting information on possible substitutes for the woods used in vehicle making, is merely another indication of the difficulties in getting adequate supplies at the present time and of uncertainty as to the future.

Hickory is often referred to as if it were a single species, like red gum or yellow poplar. In reality there are 10 different kinds of hickory trees. For hickory-handle purposes those known as true hickories are most valuable. The pecan hickories include the water, nutmeg, and bitter nut varieties. The true hickories comprise shagbark, pig shellbark, pignut, and mocker nut. The handle industry is largely dependent on this last group of trees for its raw material.

The annual consumption of hickory by the handle trade is something over 120,000,000 feet board measure. Little, if any, of this material passes through the sawmills, for it is ordinarily cut and shipped to the handle factories in the form of log bolts or billets. All hickories do not give the same service when made into handles. The various parts of the same tree may show different properties, and the quality of the wood near the center is quite likely to differ from that nearer the bark.

The wood of the butt of a young hickory tree is of greater average toughness than it is when the tree is old. The wood of butt cuts of both old and young trees is tougher than that cut higher up the trunk. The handle manufacturers, for the most part, demand second-growth hickory, which consists of young stock of rapid growth.

Hickory is the best known material for certain classes of tool handles, such as the ax, adz, pick, hammer, and hatchet. There is a certain strength, toughness, and elasticity to hickory which nature has denied to other commercial woods. Some are stronger, many are harder, but the rare combination of the qualities mentioned is lacking in all of them.

The raw material for handles in the form of short log bolts is sometimes split into handle blanks in the woods, but the usual practice is to rip-saw the bolts into blanks at the factory. The split-handle blank is considered superior to the sawed blank in that it insures a straight-grain handle. On the other hand, sawed blanks, though they are likely to show more cross grain, are more economical in the use of timber.

Hickory, due to its unrivaled properties of great strength, elasticity and resilience, is used almost exclusively in the manufacture of handles for golf clubs. The constantly increasing popularity of this sport has placed another demand on the hickory supply.

"After reading the October, November and December issues of the American Forestry Magazine I am more than pleased to know that they cover all branches intelligently and I get from them continual hints, help, and suggestions."

CHAS. L. CLARK.

### Evergreen Memorials



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### THE MOONLIGHT TRAIL

By David L. Goodwillie.

The moonlight trail, oh, that the trail of dreams:

The sunlit trail for labor, but the night  
To follow stars, to bathe in silver beams,  
Forgetting fact in visions to delight.

Day is too truthful, shows us life too well,  
But night is shadowed vales and quiet  
trees;

Day has no secret that it will not tell,  
But night is wonderment and mysteries.

The moonlight trail, oh, that the trail of rest,

The fairy trail unhurriedly we go  
And take the cherished dream from out  
our breast

And, by moon magic, think that it is so,  
For there is nothing then that cannot be,  
And not a hurt we ever really knew;  
Yea, in that hour it seems to you and me  
That day's a lie and only night is true.

The moonlight trail, oh, that the vision fair  
Of that dear night to follow life's hard  
day,

When men shall know no more the curse  
of care

And walk at last some sweet imagined  
way.

So, if you doubt, and if your faith shall  
fail,

If day's bright sun can never make you  
smile,

Get out and walk upon the moonlight trail  
And have your visions for a little while.

### FARMERS AND FORESTS

"The importance of the relationship between the nation's forestry problems and the farmer was well brought out by President Harding at the opening of the farm conference," said Dr. Henry S. Drinker, a director of the American Forestry Association, who was in Washington at the time the National Agricultural Conference was held.

"The President realizes that the growing of forests is a crop-producing proposition, and we should have forest crops coming along every year, just as we have wheat and corn.

"The great work that has been done by the United States Forest Service along this line can not be overestimated at this time. That work must continue. We of the American Forestry Association are celebrating the fortieth year of a forestry organization at our meeting here. The first organization was in 1882. With such encouragement as this from the President of the United States in his talk to the farm conference, we feel sure that much more will be done for the preservation and protection of our forests in the next forty years than has been done in the past."

### HARDING AND FORESTRY

President Harding opened the National Agricultural Conference by directing the attention of the farmer to the importance of forestry. Fifty years ago trees were more bother than they were worth, but today a man with a walnut grove has a fortune, so scarce has become this kind of timber. In the early days every farmer had a wood-lot but now they are few and far between.

Today the center of the lumber industry is nearing the Pacific Coast. The state of New York, which once exported lumber, now pays \$55,000,000 a year for imported lumber. The moving of the base of supply increasing distances from the market naturally raises the cost to the consumer. The average farmer spends about \$1,000 a year in improvements on his place, but instead of going out to his wood-lot for his lumber he goes to town. He also goes to town for his fuel these days.

The President, in calling the attention of the farmer and the country to the need of utilizing our waste lands for growing trees, is co-operating with those who are now advocating such legislation before Congress. Legislation that will give better protection to the forests so that nature may have a fair opportunity to do the necessary reforesting would be a splendid move and the President's message has broken the trail.

### FINLAND'S FORESTS

IN an effort to provide American lumber interests with complete and reliable information concerning the lumber markets and resources of the world, the Bureau of Foreign and Domestic Commerce has just added another exclusive lumber report to its rapidly expanding list of special studies on that industry and trade.

The latest report which covers Finland—an important country from a competitive standpoint—is considered the most comprehensive study of lumber conditions in that country which has yet been published. Formerly, Finnish lumber exporters were content with the markets of Europe. Now, however, they are making energetic efforts to expand to other countries, and it is likely that American lumbermen and exporters will feel the force of this awakened interest.

The report says that Finland has the largest percentage of forest area of any country of Europe, estimating its future exportable surplus at about 2,000,000,000 feet annually. It contains much information which should be of interest to American lumbermen and exporters. Among other subjects it discusses Finland's forests, lumber manufacture, cost of production, export trade, prices, character of timber, markets, shipping, etc. The activities of the Finnish Exporters' Association should be of particular interest to American shippers.



## Pleasant Things Taken From Letters to the Editor

"A bunch of us here at Stanford University are regular readers of AMERICAN FORESTRY, and we enjoy it immensely."

CARL WILHELMSON.

"I have been a subscriber to your magazine for only one year but I never expect to be without it again. I am now a student expecting to take up forestry as my life's work and find this magazine a very valuable help to me."

CLARK R. MERIDITH.

"I appreciate AMERICAN FORESTRY very much and wish you success in a most worthy cause."

F. H. CHAMBERS.

"Congratulations on the good work you are doing. I believe AMERICAN FORESTRY is going to take hold more and more on the people, and they need it."

REV. J. W. BACHMAN.

"The article on the Gannet in AMERICAN FORESTRY is excellent; beautifully illustrated, and a good paper all through."

Norwich, England. J. H. GURNEY.

"I am so delighted with the December Number of AMERICAN FORESTRY magazine with its splendid illustrations of Christmas trees, and cannot help wishing that some of my friends also should possess this number."

HERMAN ROSER.

"A wonderful magazine. We appreciate it more and more as each number arrives. It will save the forests of America."

DR. W. C. GALLAGHER.

"I want to congratulate you on the manifest improvement in the magazine. You are giving us more real tree talk. The last two numbers were very fine."

P. E. ALLIOT.

"I read AMERICAN FORESTRY from cover to cover. Our National Parks are of deep interest to us and also the great trees on the Pacific Coast."

MRS. GEO. H. THAYER.

"I greatly enjoy AMERICAN FORESTRY. The information is very valuable to elementary science teachers. I am reading back numbers with much interest."

D. D. DOUGHERTY.

"AMERICAN FORESTRY is great—the pictures especially and there is so much in a picture. I am going to try and get my 41 Deputy Fire Wardens to subscribe for it."

E. N. WRISTON.

"Ever ready for any service in my power for the benefit of the best interests you and our association stand for."

GEORGE VOIGTLANDER.

"Your magazine is an important factor in my reading. I take several magazines and yours has steadily improved. It covers important matters in which every man, woman, and child should be interested."

F. D. FOOTE.

"We certainly like the magazine and feel very sure there is not another magazine that covers the ground so thoroughly and effectively as the AMERICAN FORESTRY."

GEORGE W. GURNEY.

"I enclose check for \$4.00 for dues in the Association. Am glad to help in the great work even though it is very little. Wish you greater success for the coming year."

OSCAR DINWIDDIE.

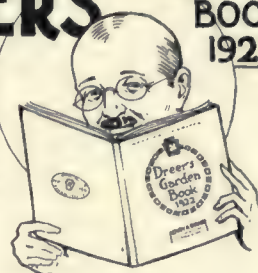
"I greatly enjoyed Dr. Shufeldt's article on 'cats' in the October number and appreciate the one in November also. Congratulate you on the publication of these popular articles, which are so much needed."

Supt. of San Diego Public Schools.

CARROLL DE.W. SCOTT.

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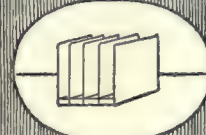
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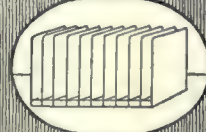
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## BOOK REVIEWS

*The Management of the Harvard Forest 1909-19.* By Richard T. Fisher. Harvard Forest Bul. No. 1. Harvard University Press. 1921. Pp. 27. Figs. 20. Maps 3.

Every one interested in technical forestry who has not a copy of this splendid record of achievement in actual forest management, should at once send for a copy. Mr. Fisher, with characteristic modesty, has set forth briefly but most readably the results of ten years of management of the Harvard Forest. It is stimulating and encouraging.

Beginning with the objects of management of this two thousand acre tract in north-central Massachusetts, the bulletin traces the composition and history of the forests of this typical New England region. When the Harvard Forest was first put under management the stand was almost entirely second growth and under seventy years of age. It was 95 per cent even-aged, having originated on cleared or cut-over land.

Aided by constantly improving markets, which enabled complete utilization, the management has been very intensive. From a growing stock of 10,500,000 board feet in 1908 and an increment of 250,000 board feet, the forest has been built up by a sustained yield equal to the increment, to a present growing stock of 12,435,000 board feet with an annual growth of 380,000 board feet. All cut-over areas have been successfully reproduced. The results of the varied methods of cutting employed show that it is possible to bring about reproduction by almost any system of gradual removal. The two-cut shelterwood has come to be adopted for reproducing the pine type—the first cutting is in the nature of a heavy "thinning," the second is a clear cutting.

The slash is piled and burned, usually as the logging proceeds and all hardwood advance growth is cut close to the ground and in *advance of the logging*. Then there is early weeding or cleaning of the young stand beginning in the fourth year after tutting. Besides this there have been release and improvement cuttings in the immature stands and a total planting of 57 acres with a great variety of stock.

A feature of the logging and milling is that of yarding the logs to a central mill site. This is more costly, but well worth while in forests under continuous management.

Costs and returns show total charges of

## BOOKS ON FORESTRY

AMERICAN FORESTRY will publish each month, for the benefit of those who wish books on forestry, a list of titles, authors and prices of such books. These may be ordered through the American Forestry Association, Washington, D. C. Prices are by mail or express prepaid.

FOREST VALUATION—Fillibert Roth.....	\$1.50
FOREST REGULATION—Fillibert Roth.....	2.00
PRACTICAL TREE REPAIR—By Elbert Peets.....	2.25
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\* This, of course, is not a complete list, but we shall be glad to add to it any books on forestry or related subjects upon request.—EDITOR.

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Various tables bring details of area and age by forest types; stand and increment; and summary comparisons of types areas in 1909 and 1919. These last are arranged according to "periods" of 20 years each; 3 periods in the 60 year rotation. The oldest period is known as I; the youngest as III. The results show a gradual improvement in the distribution of the age-classes, as follows:

Actual Area 1909—Period I 40-60 years, 603.59 acres; period II, 20-40 years, 835.50 acres; period III 1-20 years, 187.76 acres. All ages (totals), 1,626.60 acres.

Actual Area 1919—Period I 40-60 years, 557.50 acres; period II 20-40 years, 858.44 acres; period III 1-20 years, 359.14 acres. All ages (totals), 1,775.08 acres.

The normal distribution would be for each period 542 acres in 1909 and 592 acres in 1919. Thus there is a gradual approach towards normality especially in building up the youngest age classes which were the most deficient. This will be even more marked as cutting proceeds more vigorously. Only 65 acres were cut in the ten years which is only one-tenth instead of the customary one-half of the area in the "first period."

The typography and general appearance of the bulletin is beyond praise. It is worthy of the institution the imprint of whose seal it bears.—A. B. Recknagel.

*The Friendly Arctic*, by Vilhjalmur Stefansson. (Macmillan) \$6.00.

In this book Stefansson has abolished the heroics of Arctic exploration, and the book is all the more compelling a story for that very reason. Trying new theories meant entering deliberately on one of the most daring ventures in the history of exploration. Stefansson is in one person scientist, historian, philosopher and common-sense friend of man. By such an observer, with a mind free from fear and worry, the beauties and dangers and wonders of new places are described as by no other writer. The book carries a plot of human interest wherein scientists, whalers, Eskimos and explorers play their dramatic parts, and a reviewer has aptly said that "the Friendly Arctic makes a brilliant chapter in the progress of civilization."

A very attractive and interestingly written leaflet entitled "Little Bits of Sugar for the Birds" has been put out by the F. W. Kelsey Company, of New York. It deals with the desirability of preserving and protecting our game birds and advocates the planting of unused lands with native berry and fruit trees and shrubs so

as to provide food and protection for such birds and at the same time utilize the land to good advantage.

#### INDIANA'S FORESTS

William A. Guthrie, chairman of the Indiana Conservation Commission, in addressing the lumbermen of his state, said:

"A little more than a century ago Indiana was covered with the finest hardwoods ever grown. In the recollection of many of us this state possessed vast timber areas which included white oak, poplar, walnut and gum.

"The most adaptable land for forestation in Indiana is in the southern part of the state. There are about 1,000,000 acres of the Ohio River watershed which are suited only for growing trees because the land is too rough for cultivation." He advocated the purchase of this land, some of which contains second-growth timber up to 20 years old, and he argued in favor of state and federal ownership. Individual ownership will never settle the forestation problem, Mr. Guthrie said, because timber is a long-time crop and the individual is hard to find who will invest heavily in a business that yields such slow returns.

In arguing for an Indiana forestation program, the speaker cited the record of other states along this line. Michigan has 855,000 acres of forest lands, he said. New York has 1,767,778 acres, and Massachusetts now is acquiring all available lands for reforestation.

Indiana has slightly more than 3,000 acres of state forest lands, on which the state conservation department is experimenting at growing hardwoods.

Much of the land in the southern part of the state which is available as the foundation for a future timber supply in this commonwealth can be obtained at from \$2 to \$10 an acre, Mr. Guthrie said. He ended his speech with a request for the co-operation of the members of the association in the forestry program of the State Conservation Commission.

#### GAVE ALMOST 3,000,000 TREES

The Pennsylvania Department of Forestry in 1921 distributed free 2,962,089 young forest trees. They were given to 1,091 owners of land in the State. It was the second largest annual distribution of forest trees in the history of the Department.

The leading varieties planted were white pine, Norway spruce, Scotch pine, Japanese larch, sugar maple, black locust, and white ash.

This fall the Department of Forestry gave away 190,833 trees to 125 applicants. Among the trees supplied were 2,048 ornamental trees, which averaged three feet in height. They were planted on the grounds of public schools, churches, and municipal parks. The Department will have about 3,500,000 trees for free distribution in 1922.

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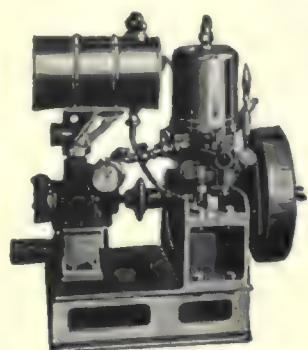
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Washington, D. C.

#### FORESTRY COMMITTEE OF AGRICULTURAL CONFERENCE

The Forestry Committee of the President's Agricultural Conference has reported a brief statement including general recommendations concurred in by the members of the committee which included in addition to Mr. Gifford Pinchot as chairman, Mr. A. W. Laird, of Potlatch, Idaho, president of the Western Forestry and Conservation Association; Mr. George W. Sisson, of New York, president of the American Paper and Pulp Association. Mr. C. H. Worcester, of Chicago, was also invited to participate. The report of the Forestry Committee of the conference contains no new information, but in general records the interest of those engaged in agriculture in adequate solution of the nation's forest problem.





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## REDWOOD GROVE DEDICATED

A grove of magnificent redwood trees in Humboldt County, California, has been dedicated to the memory of Col. R. C. Bolling, the first American officer of high rank killed in the World War. In an address at the dedication ceremony Madison Grant, councillor of the "Save the Redwoods League" said:—

"Let us on this solemn occasion in dedicating this grove of Redwoods to the memory of Colonel Bolling resolve that we shall continue the effort to preserve for those that come after us some portion of the heritage that was ours.

"No more destructive animal has ever appeared on the face of the earth than the American back-woodsman with his ax and his rifle. Since the Civil War, we have plundered half a continent. No such destruction since Caesar plundered Gaul has been accomplished in like time. In fifty years we have killed all the animals of the plain that in their millions had lived there for tens of thousands of years. The bison has long since gone, except where protected. The antelope is all but gone, the herds of elk are dwindling fast, and your mighty California grizzly is utterly extinct, so that even a battered skull is a highly prized trophy for a museum. The smaller animals and birds are many of them verging on extinction. Our fish in their abundance have utterly disappeared from many streams in the East, and if it were not for artificial restocking, would have entirely vanished. In many parts of the country, like the Red River Valley, the richest soil known to man has been exhausted in a generation.

"But bad as this slaughter of life has been, much of it can be restored if only we have a place of refuge for it when it is brought back. That refuge can be only the forests, and what have we done with our forests? Chopped them, and burned them, and wasted them: and now almost the last of the great stands of timber are here on the Pacific slope. We are in the center of the best of them. Probably nowhere on earth does there exist a forest to compare in continuous grandeur and unqualified beauty with the Redwoods that are found along the Eel River and to the north. We have reason to believe that no finer forest ever did exist on earth during the millions of years since vegetable life first appeared. It is, therefore, not merely a privilege, but it is a sacred duty for Americans to guard and to preserve what

little is left of this heritage our fathers so cheerfully wasted. This is not a matter of sentimentalism. It is not a vague idealism. It is a reality. These trees are part of our national monuments, our national inheritance, of far more value to ourselves and to those who come after us than any of the works of man."

## MAKING PACKING BOXES

Among the secondary wood-using industries the manufacture of packing boxes ranks first in New York State. This use of wood includes box shooks, packing boxes, piano and organ shipping boxes, packing crates, and all kinds of material used in the industrial establishments for storage and shipment of factory products, according to a bulletin issued by the New York State College of Forestry.

New York being the Empire State in manufacturing, the demand for boxes in which to crate and ship the output of the factories is naturally large. The annual consumption of lumber in the manufacture of boxes in New York amounts to 324,219,000 board feet. This surpassed the lumber used in planing mills by 94,000,000 feet in 1919, the last date for which comparative records have been obtained.

Adding to the amount of wood used in the class of containers, just described, may be placed baskets, berry crates, and minor packages which brings the quantity of lumber used up to 332,746,000 board feet. These figures do not include the cigar and tobacco box industry nor the wood used in cooperage.

## LEHMAN CAVES NATIONAL MONUMENT

By a proclamation of President Harding, signed January 24, a 593-acre tract in the Nevada National Forest was set aside as the Lehman Caves National Monument. For twenty-five years these caves have been known locally, and for some time individuals have been trying to gain control of them, but the action of the Chief Executive retains them safely for all the people and prevents the destruction of the many objects of scenic and scientific value. The area remains a part of the National Forest, but the monument can be used for no purposes that interfere with its preservation as a national monument. It is the eleventh national monument to be established in a National Forest, and the first one in Nevada.

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**CALIFORNIA'S FIRE BILL**

A million dollar loss to timber, range and grain was California's tribute to the fire demon during the past season, according to the annual fire report issued by the United States Forest Service and the California State Board of Forestry.

The report states that 2,245 fires were handled by the Federal Government and State organization. Information secured by these bureaus shows that in addition 293 grain fires burned within the State. The alarming and disconcerting fact that ninety percent of these fires result through carelessness and negligence of man, the officials of these bureaus state, deserves the serious attention of all Californians, particularly when the statistics indicate that 745 of these fires are directly chargeable to campers and smokers. As travel along the highways and in our mountains increases the public must exercise greater care with fire if our resources are not to suffer irreparable loss.

The report shows that the losses were made up of the following: Timber \$67,851.00, range \$367,243.00, improvements \$189,738.00, and hay and grain \$370,506.00. The fire bill is further augmented by an item of \$175,000.00 spent for fighting these fires. Six-hundred State and Federal officers are engaged in the difficult task of controlling the fires in California's forests and on the watersheds.

**RESOLUTIONS BY THE PROFESSIONAL FORESTERS**

The Society of American Foresters, being the organization of technical foresters in the United States, at its recent annual meeting at Toronto passed strong resolutions protesting against the proposed transfer of the United States Forest Service from the Department of Agriculture to some other department of the Government, stressing the close alliance of forestry with agriculture as both sciences are concerned with crop production, and the natural activity of the Forest Service in developing rural community life adjacent to the National Forests and through cooperation in fire protection under the terms of the Smith-Lever bill. A resolution regarding the necessity for special appropriations for pine blister control work was also passed, as was one urging the necessity of liberal support of forest research in the various branches of government devoted to this most important work.

**PENNSYLVANIA RAILROAD PREVENTS FIRES**

To prevent forest fires along their tracks, the railroads in Pennsylvania burned more than 1200 miles of safety strips during 1921, according to a statement issued by George H. Wirt, Pennsylvania's Chief Forest Fire Warden. The strips

were cleared 100 feet wide on both sides of the tracks to stop fires from spreading to timberlands adjacent to railroads. The safety strip mileage constructed last year was far greater than during 1920, when the railroads first agreed to co-operate with the Department of Forestry in the removal of brush, forest litter, and other inflammable materials from the vicinity of tracks. Statements from the railroad officials show they spent about \$65,000. The Pennsylvania Railroad and the Philadelphia and Reading Railway Company led in safety strip work during 1921. In the Weiser State Forest District, in Schuylkill, Carbon, Luzerne, and parts of Lebanon, Dauphin, Northumberland, and Columbia counties, there were built 506 miles of strips, more than 250 miles of them along the tracks of the Lehigh Valley Railroad.

**PLANTING EXPERIMENTS ON REDWOOD CUT-OVER LANDS**

The Forestry Division of the University of California is carrying on some interesting experiments in artificial reforestation in cooperation with the Union Lumber Company on cut-over lands north of Fort Bragg, Mendocino County. The planting work was started in February 1921, the planting site being a long strip across the watershed of Campbell Creek including a range of conditions typical of the redwood region. Among the more important trees being tested are Sugar Maple, Black Walnut, White Ash, Basswood, White Oak, Red Oak, Western Red Cedar and Douglas Fir. Direct seeding in spots was tried with several species as well as planting nursery grown seedlings. An examination in September showed 60-90 per cent survival for practically all species planted as seedlings but almost total failure for all seed spots.

Redwood sprouts vigorously from cut stumps and grows rapidly but under present logging conditions this does not result in a completely stocked stand of timber due to the large size of the trees cut and the comparatively small number of stumps per acre. It is hoped the above experiments will demonstrate that one or more valuable species can be successfully grown in association with redwood. Such associated species besides producing a valuable product will force the redwood to drop its lower branches and grow with the long bole so necessary to produce clear lumber.

As an example of how a fully stocked stand of redwood will grow in volume, a sample plot on bottom land in Mendocino County was measured in July 1921. This stand was fully stocked containing 258 trees per acre; because of its bottom land location the trees had escaped injury by fire and soil and moisture conditions were optimum for the region. In 50 years of

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## ATTENTION, FORESTERS

AMERICAN FORESTRY will print, free of charge in this column, advertisements of foresters wanting positions, or of persons having employment to offer foresters. This privilege is also extended to foresters, lumbermen and woodsmen, discharged or about to be discharged from military service, who want positions, or of persons having employment to offer such foresters, lumbermen or woodsmen.

### POSITIONS WANTED

**POSITION** wanted as Forester or Superintendent on a private estate or otherwise, by a thoroughly practical, experienced, married man. English. Competent to take charge of any foresters' post in every detail. Can undertake the control of a saw mill; building roads, nursery work, landscape planting, tree work, and handling help. Good references. Address Box 3040, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (1-3-22)

**FORESTER**—Experienced in cruising and general woods work, also Aerial Photograph Interpretation, would like position with Pulp or Lumber Company. Address Box 3045, in care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (1-3-22)

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**FORESTER**—Has year's leave of absence from teaching duties, beginning October 1, 1922. Wide experience along Forestry lines—cruising and handling men, gained in the U. S. Forest Service, teaching and in the A. E. F. Will go anywhere, Alaska preferred, and tackle difficult proposition. Address Box 3060, AMERICAN FORESTRY MAGAZINE, Washington, D. C. (2-4-22)

**YOUNG, Technically Trained Forester** with experience in surveying, estimating, forest mapping, preparation of timberland reports, etc., desires permanent position as forester on a private estate (not necessarily large), the position to allow considerable time for the practice of timberland service or forest engineering to other private owners or pulp concerns. In a favorable locality salary could be made very reasonable. Address Box 3065, AMERICAN FORESTRY MAGAZINE, Washington, D. C. (2-4-22)

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### WANTED

**FORESTERS, UNEMPLOYED OR EMPLOYED**, having executive ability and possessing the gift to lead others, to write us. Great opportunity for those that qualify. State age, reference—(2) if employed. School graduated from (years). Confidential. Rangers also answer this. Address Box 66-66, AMERICAN FORESTRY MAGAZINE, Washington, D. C.

growth this stand had produced in excess of 100,000 board feet per acre. A truly remarkable growth and indicative of the important role redwood lands, if properly managed, can play in quickly producing a large volume of timber. In order that maximum production may be realized two things are imperative; a fully stocked stand and protection of the young growth from fire. The planting experiments may help to solve the question of how to get a fully stocked stand, the fire protection can come only through concerted action on the part of land owners in cooperation with the state fire protection service.

### "MARVELS OF SCIENCE"

Since forestry took on the habiliments of a science and engineers, chemists, and technicians began investigating forestry problems, such as the growth and protection of the forests, the harvesting of forest crops and the utilization of wood therefrom, many discoveries have been made that would seem almost without the pale of possibility, according to a bulletin of the New York State College of Forestry.

One of the scientific developments that may have an important bearing on the supply of automotive fuel of the future is the production of ethyl or grain alcohol from wood. Grain alcohol might be employed as a substitute for gasoline, provided it can be produced cheaply and engines adapted to its use but the practical application of this product like many other utilities that had their inception in the laboratory, must finally depend for its commercial development upon mechanical ingenuity and capital.

Sawdust can be converted into good fodder for cattle and farm stock. Other products of surprising variety and character are obtained either wholly or partially from wood, such as smokeless powder, linoleum, artificial silk, paint, varnish, soap, ink, celluloid, sausage casing, acetylene, chloroform, iodoform and many kinds of dyes and oils.

A new field has opened in scientific research with regard to the forests and their products. The results achieved in the last ten years would seem to indicate future developments that now are unimaginable. In fact, we can but dimly vision the infinite possibilities that lie ahead of scientific investigation in forest and wood problems. The time may come when wood will be more generally in demand for chemical purposes than for building material.

Many substitutes have been discovered for wood but the new uses have more than kept pace with the development of substitutes. What today is a dream will tomorrow be a reality. It would be rash, indeed, to prophesy how far scientists may go in working out new uses for wood and new methods of utilizing wood.



# AMERICAN FORESTRY <sup>193</sup>

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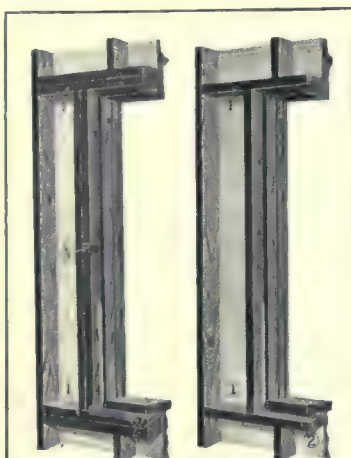
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*Illustrating a Good and a Faulty Method of Framing Around Window Openings*

THE above drawings illustrate a good and a faulty method of framing around window openings. This is one of the points discussed in "The High Cost of Cheap Construction," mentioned in the opposite columns.

The framing around window openings (Point 1) should always be double to insure greater strength and to permit better nailing of outside sheathing, siding, casings and interior trim.

Careful fitting of lumber at Point 2 and caulking or packing between lower header and sill with a substance such as mineral wool will prevent much leakage of heat in winter.

The side jambs of the window frame should be braced at Point 3 to hold them securely in alignment.

"The High Cost of Cheap Construction" will be mailed free, on request. It is another evidence of the policy of this organization to have every foot of lumber it sells deliver 100% service.

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**R**IGHT in your neighborhood you perhaps know a dozen houses that you wouldn't pronounce first class.

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# AMERICAN FORESTRY

VOL. 28

APRIL, 1922

NO. 340

## A SEVEN HUNDRED YEAR LOGGING COMPANY

By Arthur Newton Pack

European Commissioner of the American Forestry Association

**I**N the Black Forest of Germany is located the oldest privately owned and operated forest in the world. Seven hundred years ago this area formed part of the large estates of one of the Counts of Eberstein, concerning which gentleman nothing more descriptive can be said than that he was a typical and inveterate crusader. Time after time he rallied his retainers about the ancestral banner to set out for Palestine, and as often returned home with only a ragged remnant of his band. Each expedition left him poorer, and finally to meet the cost of a last effort, he mortgaged to a group of thrifty

Holland, where the requirements of ship building brought good prices. This was centuries before the first idea of forest conservation had occurred to anybody, but as there was no market for anything but the largest trees, which were also accessible to the streams, the forest was not ruined. So grew up one of the world's earliest corporations and without doubt the first commercially productive private forest which has had an uninterrupted producing record up to the present day. The ownership has remained in the hands of the descendants of those rafters, most of whom have become wealthy families and now control not only that identical forest, but as individuals and members of other companies own and operate some of the finest saw mills, paper mills and other wood-



FIR AND SPRUCE IN THE BLACK FOREST

This identical area has been logged over for seven hundred years without decreasing the total volume of the stand.

woodsmen the best portion of his forest domain. History relates that the poor Count was finally killed by the Turks, and as he left no heir his property fell to the state. The ruler of Baden subsequently tried his best to break that mortgage lien title of the woodsmen, but his efforts were of no avail, and the forest remains to this day in their successors.

These men who supplied the money for the Count to spend were known as rafters, because they put together great rafts of the largest fir timbers and floated them down the Murg, the Neckar and the Rhine, to sell in



A GIANT SILVER FIR

The Chief Forester makes cuttings to encourage the growth of very large timbers such as this, for the large trees are here most in demand.



using concerns of Germany. The forest comprises about 12,000 acres of land similar to our Adirondack mountain region, said to be worth in the neighborhood of \$300 an acre, and there is probably almost as much timber growing on the land today as there was 700 years ago.

Logging is carried on in a very interesting manner. The trees to be cut are all selected and marked in advance by the chief forester, who spends a hundred days in the year solely in this way. The chief demand being for very large timbers, he thins out the forest with this end in view, taking the weaklings first and reserving the very finest trees with plenty of light and air for rapid growth. Many European foresters make all their cuttings on the basis of rather complicated rules and formulas, but it is significant that here in one of the best paying forests of the world the slogan is "not system but common sense." In this way, the same patch of ground is revisited for cutting about once every ten years.

The cutting down of the trees has to be very skilfully carried on, so that the falling giants will do as little damage as possible to the natural growth of young trees beneath. They are never allowed to fall one across the other, but one is generally removed so that another may be thrown in the same spot. An operation which, in America, usually causes more damage to the forest than the actual felling is the dragging out of the logs. Our steam donkey engines yank them in with such determination that a veritable devastation is left behind, but here in the German mountains where protection of the young seedlings is of first importance, the loggers are obliged to resort to somewhat slower and more appropriate methods. Good permanent stone roads everywhere traversing the forest are required, but since they are to do duty for generations, the cost of construction is an investment which need be only very slowly written off. These roads follow along the mountain sides in such

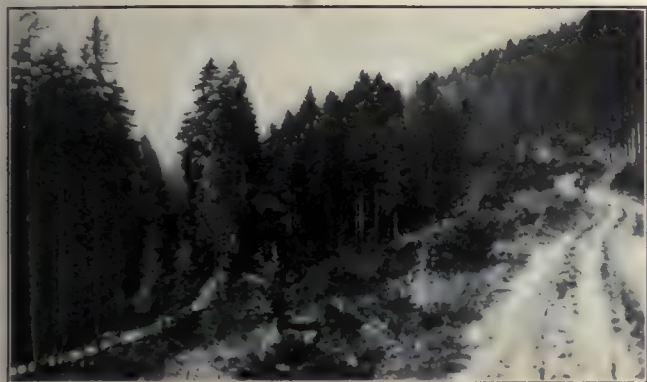


GETTING OUT THE TIMBER

The above pictures show the various operations involved in the delivery of logs and cord-wood to the roadways, with a minimum of injury to the young growth. The size of the average log is well illustrated in the group of logs and loggers shown at the bottom of the slope.



a way that the logs can always be slid down to them from above. It is only necessary to attach a check rope to the upper end of the log, clean off the bark and branches and give it a start. Several men follow it on either side to guide its passage with crowbar thrusts, while above, with the rope turned about a tree, another man controls the speed of the descent. So expert does this crew become that log after log slips down in the same track, a track hardly wider than the diameter of the largest butt. It is quite as fascinating to watch as the



PERMANENT LOGGING ROADS

Good, permanent roads traversing the forest are required, but since they do duty for generations, the cost of construction is an investment which need be only slowly written off.

acrobatic donkey engines of the Pacific coast, and frequently hardly less rapid.

The removal of the stacked piles of cordwood from top and branches is rather more exciting to both onlooker and participants. The wood is loaded upon one-man



A SAW AND PULP MILL IN THE BLACK FOREST

The stockholders in this company are also its principal customers—descendants of the original rafters, they now own and operate some of the finest wood-using concerns of Germany.

sledges with shafts as if for a pony. One man picks them up while the loaders give a starting shove and down he goes. As the slope becomes steeper the pace increases, for there is no stopping; all the man can do is to guide his load and keep it from upsetting. The visitor



THE LOGGING CAMP OF THE FUTURE

Oak-raftered, mud and stone houses surrounded by cultivated fields take the place of the temporary shacks so well-known in America.

sees it go careening around a little bend to avoid some young growth or old stumps and hopes for the best until a shout from below reports the safe arrival. Sometimes accidents do occur; the conductor is undecided for an instant which side of a stump to go, the runner strikes a



GERMAN PEASANTS COLLECTING FIREWOOD

After the loggers have completed their task, nothing larger than about an inch or two in diameter remains. The nearby peasants pay about 10c an acre for the privilege of collecting these twigs for their household fires.



tree, and man, sled, and cordwood land in a much disordered pile.

The "Schifferwald," for such is its short name, ("Murgenthallerschiffergesellschaftswald" for long), boasts not a single lumber camp such as we might know it in America. Within its borders lie one or two clusters of oak-raftered, mud and stone houses, built perhaps by the great, great grandfather of the present occupant—perhaps longer ago than that. Here live the woodsmen with their wives and usually extensive families, whose sons will some day grow up to take the father's place as woodcutters for the great company. One cannot but think of a time, not so far off perhaps, when the last temporary shacks of the American lumber company will have given way to well constructed forest villages, housing the men who care for the permanent resources of our wood working industries.

The keynote of every successful private operation must be profits. An average of three per cent net per annum earned by this company may not seem very large in comparison with some other businesses, but every such proposition owned by its principal customers has a double

value. The main point is that the stockholders are assured of a permanent annual supply of saw logs or pulpwood as they may require, and there is hardly a sawmill or especially a paper company in America that would not jump at such an opportunity.

This is a forest of Spruce and Fir, depending for its profitable operation on complete utilization of every cubic foot of wood in the tree, not just about one-third of it as in America. The large logs go for lumber, the tops and cleaner branches for pulpwood, the spruce bark to tanneries, fir bark and all knotty or small branches for fuel. After the loggers have completed their task nothing larger than about an inch or two in diameter remains. Then the nearby peasants, the wives and daughters of the woodcutters appear and pay about 10c an acre for the privilege of collecting the remains for their own household fires. If anything is then left it is scattered by the woodsmen so that accumulated piles may not hinder the growth of the seedlings. Nature, aided by perfect fire protection, does the rest, for the seed falls from the remaining uncut trees and every low stump is soon surrounded with new little shoots of green.

## IN THE BLACK FOREST 43 YEARS AGO

IT is particularly interesting, in view of the description in the above article of lumbering in the Black Forest to read what Mr. Charles Lathrop Pack, the father of the author, wrote about his visit to the Black Forest forty-three years ago. The following extract is taken from an article in the Cleveland (Ohio) Herald in August, 1878:

"Tuesday we arrived here and presented our letters of introduction to Herr Katz, one of the largest lumber manufacturers of the Black Forest. Herr Katz is also a member of the German Parliament, is well-posted about the politics of the United States, and sides with the Republicans. Yesterday we were invited to look at his saw mills, of which he has four. He very kindly showed us through all his mills and gave us much general information. The mills were a great surprise and very much larger than we expected to see in Europe.

They all run by water power, of which there is an unlimited supply. The largest mill contains three gangs,

a circular and a nondescript machine for making thin boards from slabs. The lumber is sent all over Germany and also to Holland, Belgium and France. Mr. Katz

furnished a large bill of timber for the Paris Exposition Buildings. No shingles or lath are made. The law prohibits shingled roofs in towns and villages, and the plaster is put directly on the walls, so there is no sale for either. The Black Forest is the largest timbered district in Germany. It is very mountainous, and all the land except the valley bottom is covered with forest. The timber is of three kinds, all species of pine. The variety called by the native Germans 'tanne' and in many respects like our American spruce, comprises two-thirds of the total. The forest is owned, almost exclusively, by the general and town governments, who have officers to look after their property. At



A FOREST BEAUTY SPOT

This forest in Germany comprises about 12,000 acres of land, similar to our Adirondack Mountain region.

intervals one of these officers goes through his district and marks such trees as are to be cut, and they are sold,



just as they stand, at public auction. In some cases the trees are cut by the Government and then sold. The brush, bark and roots all command a ready sale. As soon as a tree is cut a young one is put in its place. The young trees are raised from the seed, and as much care is taken to procure good seed as a gardener would take to get good seed for his melon patch. The young trees are transplanted several times, and are about two and a half to five feet tall when planted permanently in the forest. An inventory is taken of the forest every two

years and the consumption of timber regulated. Herr Katz says the amount of timber in the Black Forest is a fixed quantity and does not increase or diminish. He thinks that in fifty years there will be no more or less timber in South Germany than today. The trees do not taper as much as our American pine. They rise so high without any sensible diminution of size that they look more like gigantic cylinders planted in the earth than ordinary trees. Masts 150 feet long are sent to Holland. In other parts of Germany the timber is smaller than here."

## AIRPLANES FOR FOREST WORK

By Ellwood Wilson

The development of commercial aviation, on lines other than mail and transportation seems to have made a good beginning in Eastern Canada. The Laurentide Air Service has several contracts for mapping timber lands which will run into several hundred square miles and will show the timber types, drainage, burns etc. These are made on a basis of a fixed rate for a square mile of mosaic or map as the buyer may elect, and the cost will be much less than ground work of similar accuracy or thoroughness. It will also contract for fire protective work, covering not only spotting of fires but also their extinguishing as the plane can carry three men and a gasoline fire pump in addition to the crew.

As at present carried out in Quebec the ground patrol see the area covered once in fifteen days, the planes would see it every day that it did not rain and by spotting the fires and going down and putting them out while they were very small, would save largely in fire fighting cost but would very materially save in burnt over area. It is to be hoped that someone will give this system a good try out as contracts will be made on a basis of so much per square mile or no payment.

Capt. Maxwell, of this Service, made a splendid flight from railhead at Cochrane, Ontario, to Hudson Bay in January, with an Avro machine fitted with a rotary engine and toboggans. The trip which takes eight days by dog team was made in two hours and forty minutes and no trouble happened with the machine and no hardship was encountered. A full emergency kit of food, sleeping-bags, snowshoes, tent, ax, rifle, etc., was carried in case of a forced landing from which the plane could

not get into the air again. This shows that winter flying under the most difficult conditions is quite feasible and there will probably be no reason for shutting down aerial operations in winter.

The plane arrived at Moose Factory Hudson Bay Post before anyone was up for breakfast and everyone tumbled out in great excitement, entirely unable to imagine what the noise overhead was. Mail from Montreal usually takes nearly two weeks and a letter arrived the night before the plane telling of its coming, but was not read until after its arrival.

The possibility of all sorts of work in the great trackless north country is very large. One of the things under consideration is the payment of the treaty money to the Indians. This trip usually takes eleven or twelve weeks and costs a lot of money. With the plane it can be done in about two weeks and at a great saving. Exploring, prospecting, reconnaissance for railway lines and forestry work will all be done. This opens up the possibility of cruising for purchase which can be done more accurately and in a small fraction of the time taken for a ground map and estimate and the buyer and seller can discuss the transaction across the table with the photographs before them and without having to rely on a cruiser's report. In the survey mentioned above, eleven square miles were covered per actual flying hour.

The Spanish River Company, Ltd., have made a contract with the Dayton-Wright Company for a similar survey and it will probably soon be the accepted method for such work.

IN Sweden stumps seldom exceed three inches in height in the forests. No logging machinery of any kind is generally used. Top logs, down to one or two inches top diameter, are bunched and strapped with steel wire and floated to the nearest charcoal plant. The saw logs are on the average,  $6\frac{1}{2}$  to 7 inches in top diameter and average in length about 17 or 18 feet. The logs are generally barked in the woods in order to prevent an accumulation of barks in the river and at the mills.

ONE of the largest and most perfect fir trees ever felled in Washington was recently cut at Kapowsin and turned into lumber by a local mill. The tree stood more than 300 feet high and seven 32-foot logs were cut below its branches. These logs were of a diameter of nine feet and weighed 275 tons. They were worth \$3,000 in the rough and the first grade flooring obtained from them will sell for several times that sum. The logs scaled from 45,000 to 50,000 each.—*Daily News Intermountain District.*



# Public Opinion Rallies to American Forestry Association In Protesting Transfer of U. S. Forest Service

**Christian Science Monitor.**—A general recognition of the fact that the great natural resources of Alaska are primarily and increasingly being squandered and lost to the nation has led to the demand that the responsibility for their conservation be transferred to the Federal Government. This demand is being made by the American Forestry Association, which has been organizing the campaign for the transfer of the national forests and the national forest lands to the Federal Government. The transfer of the national forests and the national forest lands to the Federal Government is being made by the American Forestry Association, which has been organizing the campaign for the transfer of the national forests and the national forest lands to the Federal Government. The transfer of the national forests and the national forest lands to the Federal Government is being made by the American Forestry Association, which has been organizing the campaign for the transfer of the national forests and the national forest lands to the Federal Government.

WHAT'S THE IDEA? SHE WAS ALWAYS HAPPY DOWN ON THE FARM, WASN'T SHE?



Darling—in the Portland (Maine) Press-Herald

It is not claimed, of course, that this proposed transfer of control is intended to benefit the people of Alaska. The transfer of the national forests and the national forest lands to the Federal Government is being made by the American Forestry Association, which has been organizing the campaign for the transfer of the national forests and the national forest lands to the Federal Government. The transfer of the national forests and the national forest lands to the Federal Government is being made by the American Forestry Association, which has been organizing the campaign for the transfer of the national forests and the national forest lands to the Federal Government.

**Washington Herald.**—One of the great constructive achievements of President Roosevelt's administration is the transfer of the national forests and the national forest lands to the Federal Government. This transfer is being made by the American Forestry Association, which has been organizing the campaign for the transfer of the national forests and the national forest lands to the Federal Government. The transfer of the national forests and the national forest lands to the Federal Government is being made by the American Forestry Association, which has been organizing the campaign for the transfer of the national forests and the national forest lands to the Federal Government.

**Moore, H. J., Evening News.**—Washington dispatches suggest that the transfer of the national forests and the national forest lands to the Federal Government is being made by the American Forestry Association, which has been organizing the campaign for the transfer of the national forests and the national forest lands to the Federal Government. The transfer of the national forests and the national forest lands to the Federal Government is being made by the American Forestry Association, which has been organizing the campaign for the transfer of the national forests and the national forest lands to the Federal Government.

**The Outlook.**—As Colonel Greely, chief of the Alaska Forestry Service, has been organizing the campaign for the transfer of the national forests and the national forest lands to the Federal Government. The transfer of the national forests and the national forest lands to the Federal Government is being made by the American Forestry Association, which has been organizing the campaign for the transfer of the national forests and the national forest lands to the Federal Government.

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**Banger, Ma. Commercial.**—The transfer of the national forests and the national forest lands to the Federal Government is being made by the American Forestry Association, which has been organizing the campaign for the transfer of the national forests and the national forest lands to the Federal Government. The transfer of the national forests and the national forest lands to the Federal Government is being made by the American Forestry Association, which has been organizing the campaign for the transfer of the national forests and the national forest lands to the Federal Government.

**Milwaukee Journal.**—Congress is urged to transfer the national forests of Alaska from the Department of Agriculture to the Department of the Interior. This transfer is being made by the American Forestry Association, which has been organizing the campaign for the transfer of the national forests and the national forest lands to the Federal Government. The transfer of the national forests and the national forest lands to the Federal Government is being made by the American Forestry Association, which has been organizing the campaign for the transfer of the national forests and the national forest lands to the Federal Government.

**San Francisco Journal.**—The public land, devoted to the Federal Government, is essentially a real estate office. It is not a farm bureau. Its function is to get the public land into the hands of private owners as expeditiously as the laws permit. On the other hand, the Department of Agriculture exists for the purpose of showing people how to make better use of the lands they own.

and turn the direction of them over to men or departments that lack the farm viewpoint and have few points of contact with farmers or farming interests.

**New York Evening Mail.**—Under the Department of Agriculture, our forests and our forestry problems are treated as they should be with a view to the conservation and development of the nation's timber assets. The Department of Agriculture is interested in growing trees, not in selling lumber or land. Timber is a crop just as wheat is, a crop which we need to treat shamefully and which we have only begun to think of treating decently because of the educational efforts made by the forestry service.

**Pittsburgh Post.**—The best possible evidence that it will not be to the advantage of the United States Forestry Service, and consequently not to the advantage of the nation, to transfer it from the Department of Agriculture to the Department of the Interior, is the fact that the Forestry Service is a part of the Department of Agriculture, and is a part of the Department of Agriculture.

**Charlotte, N. C., News.**—The public would certainly like to know more about the changes proposed with reference to the Forestry Service. These changes are made by the Forestry Service itself, and are made for the benefit of the Forestry Service.

in the South Bill, are now fighting side by side to save the Alaska forest and the people of the American people from being robbed. None but a strong leader in movements having for their end the protection and conservation of our timber resources, is at the head of the present fight. Having members in every state, it is an organization of so little influence, and the public may rest assured that a strong leader in movements having for their end the protection and conservation of our timber resources, is at the head of the present fight.

**St. Paul Pioneer Press.**—There is little to be said about the transfer of the United States Forestry Service from the Department of Agriculture to the Department of the Interior. The transfer is being made by the American Forestry Association, which has been organizing the campaign for the transfer of the national forests and the national forest lands to the Federal Government. The transfer of the national forests and the national forest lands to the Federal Government is being made by the American Forestry Association, which has been organizing the campaign for the transfer of the national forests and the national forest lands to the Federal Government.

**Louisville Courier-Journal.**—Much good will be done by the publicity of the American Forestry Association, turned negatively upon the bills under which the Forestry Service would be taken out of the Department of Agriculture and put in the Department of the Interior, and under which the resources of Alaska would be made available to the exploiters of the State.

**The Society of American Foresters.**—The Society of American Foresters is mentioned in the "literature" of the American Forestry Association as declaring "the whole conservation movement imperiled" by the attempt to transfer the national forests to the Department of the Interior. The Society of American Foresters is mentioned in the "literature" of the American Forestry Association as declaring "the whole conservation movement imperiled" by the attempt to transfer the national forests to the Department of the Interior.

This editorial digest page is sent you by the American Forestry Association, 1214 Sixteenth St. N. W., Washington, D. C. The Association thanks the editors of the country for their fine co-operation in volunteering editorial comment on matters so vital to the public welfare.

**Kalamazoo Gazette.**—Michigan's state farm bureau has just addressed to the senators and representatives of the state a protest against the proposed transfer of the U. S. Bureau of Markets and the Forest Service from the Department of Agriculture to the Department of Commerce and the Interior.

**Public Journal.**—Pueblo is in line with many other communities in objecting to the passage by Congress of the proposed bill providing for transfer of the national forests from the Department of Agriculture to the Department of the Interior. Pueblo is in line with many other communities in objecting to the passage by Congress of the proposed bill providing for transfer of the national forests from the Department of Agriculture to the Department of the Interior.

**Federalist Press.**—Secretary Fall's proposed grab of the great Alaskan national forests, which he proposed to transfer over to the Interior Department through a development board, yet to be authorized, has aroused the American Forestry Association to loud and determined protest. Col. W. B. Greely, chief of the Forestry Service, has written the national forests in Alaska lie a practical solution of the paper problem, and that the development board plan is unnecessary, unworkable, and unfair to the people of Alaska, which will waste to develop all possible resources under certain conditions.

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The science and practice of forestry are opposing the change. They declare that for many reasons the Department of Agriculture is the place for the Forest Service and the Department of Commerce and the Interior is the place for their conservation.

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## TROUBLE OVER THE WILL



—Chapin in The Country Gentleman



# THE FIGHT FOR ALASKA'S FORESTS

SECRETARY OF THE INTERIOR FALL, exercised over the widespread and vigorous opposition to his plan for transferring the National Forests in Alaska from the Department of Agriculture to his department, issued a statement on March 4 setting forth his views. The newspapers gave considerable space to his declarations and to others which followed, including denials that the Department of Agriculture was conducting propaganda against Secretary Fall. All of this, following the very wide publication of articles opposing the proposed transfer distributed on news sheets of the American Forestry Association has resulted in the public becoming unusually well informed regarding this very important matter.

As a result of this widespread information the opposition to taking the National Forests from the Department of Agriculture, where they have been very satisfactorily administered, has become most pronounced. The newspapers are practically a unit in protesting against the proposal and scores of influential organizations have condemned it.

Secretary Fall's statement of March 4 is, in part, as follows:

"I appeared before the Committee on Territories of the House and later the Committee on Territories of the Senate, and made statements before each concerning the proposed pending legislation known, first, as the Curry Bill, which proposed, in short, the establishment of a commission form of Government in Alaska; second, of a bill along the line of the Overman Bill, authorizing the President to allocate and coordinate the duties of the different bureaus now having jurisdiction over activities and property of the national government in Alaska; and third, a bill of a similar character, vesting in the Secretary of the Interior the authority over most of such activities, by transferring to the Interior Department of the United States, offices of such bureaus operating in Alaska and the control over the property administered under the laws enacted by the Congress.

"(1) I opposed the Curry Bill.

"(2) I approved the passage of either the bill authorizing the President to allocate and coordinate, or the bill vesting the authority directly in the Interior Department.

"Among these activities was the administration of the forests in Alaska, to the end that the work of the Interior Department might be coordinated, by transfer of the forests to the Interior, the administration of the mining laws, the agricultural entry laws, the construction of roads and other methods of transportation, etc.

"This at once brought down upon my devoted head the wrath of Mr. Gifford Pinchot and his followers, and immediately there was issued a press sheet in glaring black headlines, purporting to be sent out by the

American Forestry Association. This sheet urged each person receiving the sheet to take it to the editor of his newspaper and to impress upon him its importance. In the first column appears an interview quoting from Colonel Greeley, Chief of the United States Forest Service. In the second column is a picture of this very efficient official, and under the picture the explanation in headlines: 'Colonel W. B. Greeley, Chief of the United States Forest Service, who challenges plan to get control over Alaska's forests.'

"Below this appears a prominent sub-head: 'Raps Fall in public's war for forests,' followed by a quotation apparently emanating from the American Foresters or someone else (He means the Society of American Foresters.—Editor) to the effect:

"The purposes back of this attempt can be surmised, though they are not accurately known. Secretary of the Interior A. B. Fall is apparently chief sponsor of this movement, as he was the chief sponsor for the so-called Curry Bill, still technically before Congress but probably now dead. This bill was directed against continued public control of the great natural resources of Alaska \* \* \* \* A more daring piece of legislation has not been attempted in our time. The vast wealth of the great Empire of Alaska was to be turned over to an absolutely irresponsible body, from which the people of Alaska and the people of the United States would have no appeal whatsoever," etc., etc.

"I was absent upon official business when this sheet was sent out, but immediately received a telegram from my office describing it and quoting from it. The chiefs of several of the bureaus of this department whose efforts to administer the public laws are so frequently hampered by activities of the Forestry Bureau and of Mr. Pinchot, were outraged at this vicious and unwarranted attack upon the head of a coordinate department of the Government, and appearing with a related article of his own, by the chief forester of a bureau in the Department of Agriculture. I was urged to take the matter up directly with the President and to call his attention to the impropriety, to say the least, of such practice. I replied by wire to the assistant and administrative secretaries of this department on December 30, that it was all right to call the attention of the President to the matter, but if they did so, to hand him my telegram in which I directed that if any public statement was given out it should be simply along these lines:

"That the question of Alaskan and other matters would in our judgment be commented on upon official responsibility direct to Congress where legislation is pending, and for the Interior Department officers and employees thus dealing with official business not to bias or prejudice or influence legislation by propaganda and untruthful statements."

"This telegram was called to the attention of the President and a public statement contained in a few lines given out to the press as directed by myself."

Secretary Fall also refers to statements of W. A. Babbitt, an article by Prof. H. H. Chapman, in the



# "Shall Alaska Become the Promised Land of Big Game and Money for the Interests?" Says Col. Greeley

## WARNS AS TO FUTURE OF ALASKA

Col. Greeley, Chief of U. S. Forest Service, Warns Against Development Board Plan for Alaska and Advising that the Territory be made a state as soon as it is qualified. Col. William B. Greeley, Chief of the U. S. Forest Service, in an article in the American Forestry Magazine, the official organ of the American Forestry Association, says the proposal for the board plan "may well be dangerous."

Washington.—"Warning against the Development Board Plan for Alaska and advising that the Territory be made a state as soon as it is qualified. Col. William B. Greeley, Chief of the U. S. Forest Service, in an article in the American Forestry Magazine, the official organ of the American Forestry Association, says the proposal for the board plan "may well be dangerous."

Col. Greeley has been in Alaska and made an exhaustive study of the resources which he calls the greatest asset of the United States. The article "What is Wrong With Alaska?" of this month timely nature because of the scheme to put the forests under the control of the Interior Department and publication of figures showing how the whole population of 234 per cent in ten years. Col. Greeley decries red tape methods as having retarded progress in the territory and in part writes:

"An effort is now being made to create for Alaska a Local Commission, or Development Board, which would take over the duties and authority of the various Federal executive agencies in the territory. This is a dangerous move, for the national interest in Alaska is paramount. Alaska represents, in her natural resources, her enormous agricultural areas, and her magnificent game and fishery resources, one of the great food sources of the United States. In her vast forests lies a practical solution of our paper shortage."

"The United States has, in Alaska, by many years of effort, built up national policies for the use of public lands, timber, public waters, sources of food, coal and oil resources, water power, and migratory birds from the standpoint of public welfare in the long run. It has built up specialized organizations handling these varied resources with the best technical experience and skill the country could afford. Should it now, by one stroke, cut off a vast region containing one-fourth of our total timber supply, and its abundant and consistent application of some public policies by the specialized organizations, created for the purpose of their accomplishment? I think not."

"And from the standpoint of Alaska herself, in order to bring about the most effective development of her resources, it would be unwise to cut her off from the direct application of the energies and from the technical and financial resources of several great Federal organizations which she reports in doing the very things that Alaska needs to have done."

"The Development Board plan for Alaska is unnecessary, because the same results can be accomplished by a decentralized administration of national affairs in Alaska. It is dangerous because it means a partial breaking up of the effective and uniform execution of vital public policies for dealing with natural resources. Let us, rather develop Alaska in harmony with American policy at all points. Make her a State as soon as it is qualified. Give her capital and money for the local powers that go with Statehood. At the same time handle permanent national interests in Alaska as they are handled elsewhere, both during her territorial and Statehood and after she becomes a State preserving the same policies and uniform location but with localized administrative machinery adapted to Alaska's conditions."

"The greatest evil is long range administration. There is too much centralization of administrative authority in Washington, too many delays in getting things done. And Alaska is subject to too many undesirable local Forest system may easily be mismanaged or misapplied as her conditions."

## COL. W. B. GREELEY

Chief of the U. S. Forest Service, who challenges plan to get control of Alaska's forests.

## Raps Fall in Public's War For Forests

Society of American Foresters in Nationwide Campaign to Arouse Tax Payers as to What Measure Before Congress Means to Control of Natural Resources.

Washington.—Demands to Congressmen began pouring into Washington today to kill "a daring piece of legislation" which would turn the control of Alaska with all its vast forests and water power resources, over to the Department of the Interior. Denunciation of the plan as received here and sent broadcast by the Society of American Foresters. New York Section, says in part:

"The National Forests, the National Forest Policy, and the whole conservation movement now face a serious danger. It is the duty of lovers of these forests to acquaint themselves with this danger in order that they may once more take their proper knowledge and their moral leadership into the fight."

"This danger consists in the attempt now being made to transfer the National Forests to the Department of the Interior."

"The purpose back of this attempt can be surmised, though they are not accurately known. Secretary of the Interior, A. B. Fall, is apparently the chief sponsor of this movement, as he was the chief sponsor for the so-called Curry Bill, still technically before Congress, but probably dead."

"The bill was directed against continued public control of the great natural resources of Alaska. It provided for turning over all Federal interests in Alaska—forests, water power, fisheries, etc., to a politically appointed commission, from which there was no appeal, and whose members were to be the chief sponsor for the so-called Curry Bill, still technically before Congress, but probably dead."

"Having apparently failed in this attempt, advocates of private control of our public natural resources have adopted another method. The very justifiable plan of reorganization of the Government Departments has been used upon by them as another device to advocate of private control of our public natural resources."

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## CALLS U. S. TO BATTLE ON TO FIGHT FOR ALASKA

American Forestry Association Opposes Move to Take Forests of Alaska from Control of U. S. Forest Service and Give Them to Interior Department.

Washington.—Millions of dollars in forest wealth in Alaska, for which, according to the U. S. Forest Service, in 1917, over fifty-five years ago, are at stake in the move to take the forests of Alaska from the control of the U. S. Forest Service and place them in the Interior Department, says a statement from the American Forestry Association today. The Association said on every member in every state and upon all friends of forestry and conservation to hold in its fight to keep the National forests under their present control.

"The Association points to the report of Chief Forester Greeley as an argument for the tremendous stake involved and to the fact that the U. S. Forest Service has been fighting a vigorous opposition to the proposed plan for transferring the forests to the Interior Department."

"As to what is involved the association points to the fact that the U. S. Forest Service has been fighting a vigorous opposition to the proposed plan for transferring the forests to the Interior Department."

"The National Forests of Alaska cover 20,000,000 acres and are worth 25,000,000,000 feet of timber of a quality equal to that of the best in the country. It is equivalent to nearly 6 per cent of all the timber in the Continental United States. It is also worth 10,000,000 cords of pulp wood, whose value for the manufacture of paper is fully established by existing commercial practice. Wisely handled, it is an opportunity for the future of Alaska as permanent as the paper industries of Scandinavia, and capable of supplying a third of the present per capita consumption of the United States."

"This is an opportunity which should not be thrown away by inviting unscrupulous and destructive exploitation. Since these National Forests were placed under administration in 1906 they have been open freely for the use of timber and other commercial resources under regulations of an excellent and wise management."

"They are being cut today to the extent of 45,000,000 board feet annually. They furnish 30 per cent of all the timber used in the Territory and 10 per cent of the timber used in Alaska."

"Alaskan coast with logs, they furnish a large proportion of the pulp, lumber and box shooks used in Alaska. They supply the great bulk of the timber used in the mines in their portion of the Territory. Great have been ready and freely obtained within their limits. In large numbers of salmon canneries, sawmills, villages, iron farms and commercial establishments of every character adapted to this region."

"The Forest Service has labored steadily to promote the establishment of a paper industry in Alaska, which promises to be one of its most important industrial developments. The U. S. Forest Service has established a paper mill in Alaska, and more favorable to the operator than in the case of any other mill in the country."

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## U. S. Forest Change is Vicious

Move to Put Forest Service in Department of Interior is Called "Most Serious Attack Yet Made on the Conservation Movement in This Country."

Washington.—"Shall Alaska be made the 'promised land of big game and money for the interests?' is the question up to the American people, says a statement today from P. S. Eldridge, secretary of the American Forestry Association, which opposes the plan to take the forests of Alaska out of the hands of the U. S. Forest Service and turn them over to the Interior Department."

"The tide has come for speaking about the forests of Alaska and the efforts to remove them from the jurisdiction of the Forest Service," says the statement. "No less than seven billion feet of merchantable timber stand in the Tongass and Chugach National Forests, enough to furnish annually over one billion feet of pulp wood and other material to our industries for all time if the forests are handled under the right methods of forestry. Shall Alaska become a promised land of big game and money for the interests now up to the American people to decide?"

"Under the jurisdiction of the Forest Service these forests have not only met local requirements for pulp and other products, but already two large sales of timber have been made for the manufacture of paper in Alaska, and there is an excellent promise of still additional sales. The U. S. Forest Service is succeeding in making the forests a large factor in the growth of the Territory, and under conditions which will insure the conservation of the forests for the future."

"The change would be to place the forests under the jurisdiction of the Interior Department, which has no experience in the management of forests. The U. S. Forest Service has established a paper mill in Alaska, and more favorable to the operator than in the case of any other mill in the country."

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New York City.—In a letter sent out by the New York Section of the American Forestry Association, the tax paying public is called upon to help in killing "one of the most serious attacks which has yet been made on the conservation movement in this country." The attack referred to is the plan to take the Forest Service out of the Department of Agriculture and put it in the Department of the Interior. Coupled with this is the move to get control of the vast natural resources of Alaska and the whole United States.

"The fight to kill the plan for 'board control' comes just as it is announced that President Harding is in company with Secretary Fall with the territory next summer. At the office of the Society of American Foresters word has been received that the American Forestry Association with numerous members in every state has joined the fight to keep the Forest Service in the Department of Agriculture. Part of a statement sent out in the name of R. C. Bryant, of the Yale Forestry School and president of the Society of American Foresters says:

"I am enclosing a memorandum relating to the attempt now being made in Congress to put the Forest Service in the Department of the Interior. This is one of the most serious attacks which has yet been made on the conservation movement in this country, and it is not to be lost sight of. Immediate steps must be taken to arouse the public to the danger which threatens the National Forests of the country."

"As President of the Society of American Foresters, I am writing each Section Chairman and also some others asking their help in thwarting the proposed plan."

"I realize that some of the Section Chairmen may feel their connection with the proposed legislation is impossible to take any action in opposing the proposed legislation. I do feel, however, that it may be practicable for such men to call the attention of friends of the Forest Service to the vicious legislation which is now before Congress and to suggest to them lines of action in which they may be of assistance."

"There are many local residents who depend upon the National Forests for grazing, timber and other forest products, who would gladly come to the aid of the Forest Service. Every effort should be made to see that some one outside of the Forest Service organizes this support in order that the opinions of these people may be considered at the hearings."

"This is one of the most vital questions before the forestry profession today and I hope that your action may be able to furnish strong support to the opponents of the bill."

"The bill affecting the Alaskan forests alone is S. 2703 giving the President discretion to make the transfer, and S. 2704 transferring the Forest Service to the Interior. Both these bills are now in charge of the Senate Committee on Territories and Insular Possessions. The bill providing for the transfer of all National and Insular Forests to the Interior is the so-called King Bill, S. 2740, which was referred to the Committee on Public Lands and Surveys."

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ords of the department and the Department of Justice will display exactly the same condition—that is, that case after case of timber trespass has been prosecuted by the Department of Justice, upon the recommendation of the Department of the Interior, in Alaska as well as elsewhere.

"The law grants permission for cutting timber for mining and other purposes, and the small amount of timber which has been cut in Alaska, it must be remembered, has been used for purposes recognized by the law, has been used under the law and said use has resulted in the warming of the freezing bodies of pioneers; the melting of the gravels and tundra and soil that the miners might be able to reach the mineral wealth lying below same, for the timbering of shafts for the coal mines of the Government, and the timbering, in some instances of the mines of the prospector and developer. Such use of timber is the ordinary use to which it has been put during all the ages down to the present time.

"It is true that the settler can go upon the lands of Alaska, entrance to which is not prohibited by stupid and arbitrary regulation of the Forestry Bureau, and there secure under the laws a homestead and use the sparse-growing timber upon it for the construction of a log house, where his wife may be protected and his children may be born."

"I am aware of the fact, as are the people of the western country generally where the public land and National Forests are situated, that

this is contrary to the theory of Mr. Pinchot, is not in accord with what is so well known as Pinchotism, and does not meet with the approval of Colonel Greeley.

"Right development in Alaska should be pursued upon the comprehensive plan reported long since by the Alaskan Engineering Commission, and the Alaska Road Commission, that freight for the now completed Government road may be delivered to it from the wonderful mineral deposits of the Kantishna, Mount McKinley and other mineral districts. The road building and trail building in Alaska is now:

"(1) Under the jurisdiction of the Alaskan Road Commission;

This is a facsimile of the Association's news sheet on the Alaskan situation to which Secretary of the Interior Fall takes exceptions, alleging that it was inspired by the Department of Agriculture.

New York Times, both of which he disputes, and to other articles in newspapers and magazines which he classes as propaganda.

Mr. Fall goes on to outline his views regarding Alaska and in reference to the forests, and the opposition to his plans, says:

"The laws of the United States provide a penalty for timber cutting upon the public lands not withdrawn as forests, and the records of the courts and the recorded decisions published from those of the Supreme Court throughout the circuit and district court reports, will show that these laws have been administered by the Interior Department and the Department of Justice through prosecution of those trespassing upon such timber. The rec-



"(2) Under the jurisdiction of the Bureau of Good Roads;

"(3) Under the Territorial Road Board of Alaska.

"The first and the last are cooperating closely. The second, which has twelve hundred thousand dollars in its treasury, through the gracious act of Congress, can not or will not cooperate nor allow the Alaskan Road Commission the use of any funds, nor has Congress directed that the use of these funds should be allowed outside the forest boundaries.

"My thought as a business man was that Congress should provide a proper working organization and adopt a comprehensive plan of development embracing transportation by railroad, boat, dirt road, dog road, trail, etc., the best utilization of non-metalliferous mineral deposits and other resources in mineral lands and water.

"I stated before the Committee that the present system was wrong, and suggested if Congress did not desire to coordinate other activities and place them under the jurisdiction of the Interior Department or directly under the jurisdiction of the President, then the activities of the Interior Department in the matter of homes, town sites, mines, roads and all other lines, should be transferred to the Agricultural or some other department. For this I am held up to execration, public abuse and private calumny.

"I am in possession of letters written by Mr. Pinchot to editors who he thought were in accord with the propaganda to which I call your attention, which contain his personal assurance that the entire purpose in suggesting such coordination as I have mentioned was that I should wreck the Forest Service. Upon being called to task for making this assertion, Mr. Pinchot has replied that years ago I had made an attack in the Senate upon the Forestry Bureau, and that at one time I had some personal trouble with that Bureau.

"Mr. Pinchot is right in his statement—

"(1) That I made a speech attacking the Forestry Bureau administration in 1912 in the United States Senate;

"(2) He is right in stating, but omits the facts, that several years before I came into the Senate I had a permit upon a forest reserve in New Mexico for grazing sheep;

"That I bought out other parties who had preferential rights, with waiver of their claims under the "use book" regulations; that the local assistant or deputy forester demanded of me original copies of bills of sale, etc., which were then in the hands of the recorder; that as the forester knew me, as everyone in southern New Mexico knew me, I became irritated at the delays and aggravations incident to a request for the recognition of what I believed to be my rights. I wrote a letter to the district forester, which was forwarded on to Mr. Graves, then Forester, and the latter agreed with the conclusions of the local officer; that I immediately surrendered my own permit, did not make any further application for permit under my waivers, but moved my sheep

forty-five miles across country to a ranch which I owned, and this ended the incident.

"In the speech which I made in the Senate, as can be discovered by reference to it, I stated that I was not opposed to the conservation of the forests; that I was opposing the administration by the Forestry Bureau; that I opposed the maintenance of small strips of land in more than one place by the Forestry Bureau, within which narrow strips were patented springs of water necessary for the use of stock upon the adjacent range; that such administration was merely for the purpose of securing fees with which to make some showing to the Congress of the United States, justifying deficiency appropriations from that body.

"As an evidence that my statement received consideration, I may say that 114,000 acres were thereafter eliminated from these forests, including that portion of the forest which I had specifically referred to; that other eliminations followed, and that as an interesting side matter, I may say to you that in one elimination in 1918, of several thousand acres from a forest reserve to which I had referred in this speech, every acre has been taken up under the homestead acts by the returned soldiers of the recent war.

I understand perfectly well that my ideas as to the development of our natural resources and making them accessible to our returned soldiers and other citizens, do not meet with the approval of certain narrow-minded and biased bureaucratic government officials and their sponsors."

#### PRESIDENT PACK ANSWERS FALL

The American Forestry Association on March 8 carried "The Case of the People vs. The Proposal to Transfer the U. S. Forest Service to the Department of the Interior" direct to President Harding and members of Congress. This "case of the people" is a resume of the editorial opinion of the country denouncing the proposed plan to take the Forest Service out of the Department of Agriculture. These editorial opinions were sent to the President and to members of Congress.

The Association says that Secretary Fall is misinformed if he believes that Secretary of Agriculture Wallace has anything to do with the Association's protest against the proposed transfer, or that Gifford Pinchot has anything to do with guiding the Association's policies. The statement authorized by Charles Lathrop Pack, the president of the Association, follows:

"Secretary Fall takes exceptions to what he calls 'the propaganda' of the American Forestry Association. If stating its objections to placing the United States Forest Service in the Interior Department, if giving to the newspapers the objections of the foresters of the country as voiced by the Society of American Foresters, if quoting United States Forester Greeley on the Alaskan situation, is propaganda—then the Association conducts propaganda. So did Paul Revere in his famous ride.

"If reprinting and distributing editorial expressions of the Chicago Tribune saying 'Our Forests are in Danger,' or the Milwaukee Journal saying 'No More Ballingerism



Please,' and similar expressions from the Christian Science Monitor, the Louisville Courier-Journal, the New York Evening Mail, and dozens of other newspapers is propaganda, then the American Forestry Association sends out propaganda.

"The American Forestry Association, with thousands of members who are citizens of every state in the Union, represents the public and is quite willing to rest the propaganda question with the editors of the country and with the public. It at no time has consulted Secretary Wallace as to its policies nor did he know what it was doing unless he saw it in the newspapers.

"President Warren G. Harding, in welcoming the Farm Conference to Washington, closed his address by impressing upon the delegates the importance of forestry to the farmer. That was the best kind of propaganda, in the opinion of the American Forestry Association, and it has collected comments on the President's statement all over the country and is printing these editorial comments in the next issue of its magazine.

"The Association's magazine printed an article by Secretary Fall on the recreational value of our National Parks and what they mean to the country. It then sent that article all over the country and it was widely printed. That is the kind of useful information which the Association sends out in its news service regularly.

"As President Harding well pointed out, forestry is of prime importance to the farmer. The Association stands against transferring the Forest Service because the interests of forestry are inseparable from those of agriculture. More than sixty per cent of the forests in the long run will be in small ownership either attached to farms are interspersed among farms. The development of forests and agriculture must go hand in hand and are interdependent.

"The Association opposes the proposed transfer because such a step would lead to the division of the federal work of forestry among two or more departments with a consequent duplication of work weakening the leadership and lessening the effectiveness of that work in many directions.

"As a result of the stand taken by the American Forestry Association hundreds of organizations throughout the country are voicing their protest against the proposal to transfer the Forest Service to the Interior Department.

"It will be of interest to some perhaps to know that the article by Col. William B. Greeley, Chief of the United States Forest Service, to which Secretary Fall takes exception as 'vicious propaganda' against him, was written before President Harding announced the make-up of his cabinet.

"There the case lies. We have yet to find an editorial expression favoring the transfer. The public, it seems, has its mind made up on the proposition."

#### GREELEY'S STATEMENT

Col. W. B. Greeley, commenting on Secretary Fall's statement, said:

"The idea that the Forest Service is conducting a propaganda against the Secretary of Interior is absurd.

"Following a personal inspection of the National Forests in Alaska in 1920 I wrote an article on the situation in Alaska, which took issue with the proposal to turn the natural resources of the Territory over to a development board. This proposal was an old one, having appeared and reappeared a number of different times in discussion of Alaskan affairs. The article in question was given the American Forestry Magazine for publication several months before Secretary Fall assumed his present duties. My position regarding the National Forests in Alaska was restated plainly in the official hearings held subsequently by the committees on territories of the House and Senate. Everything I have had to say on this subject has dealt solely with the principles of Federal administration in Alaska, and included no criticism or attack upon anyone.

"Whatever the American Forestry Association has to say about the National Forests in Alaska, or any other subject has been said without any suggestion or participation on my part. The American Forestry Magazine has occasionally quoted from my published statements or testimony before Congressional committees, but that is the extent of my connection with material used by the Association.

"The idea that the Forest Service is conducting propaganda against the Secretary of Interior is absurd. The question as to which department should administer the forests should be settled on its merits. Secretary Fall is misinformed if he thinks the Forest Service is making any fight on him."

#### SECRETARY WALLACE REPLIES

Referring to the declaration by Secretary Fall that he has been the object of "a vicious and unwarranted attack" in propaganda emanating from the Department of Agriculture, Secretary Wallace, in a letter to Senator Capper, said:

"There is absolutely no foundation for such a charge. Neither the Department of Agriculture nor anyone connected with it has been guilty of issuing propaganda of this kind."

Declaring that Secretary Fall's charges are unjust and are based on misunderstandings, the letter states:

"The charge seems to rest on a paragraph in an article written by Colonel Greeley and published in the American Forestry Magazine of April, 1921. The injustice of this charge is at once evident when it is known that the article in question was prepared by Colonel Greeley in the fall of 1920, some months before the present administration came into power.

"Even if the article had been published later," Secretary Wallace declared, "I find nothing in it which can possibly be interpreted as vicious propaganda or as criticism of the head of any other department."

"Colonel Greeley, head of the Forest Service, is a man of the finest character, with a very high sense of proprieties and of public duties. He is quite incapable of lending himself to improper criticism of the heads of other government departments."



Refusing to discuss reasons for retaining the Forest Service in the Department of Agriculture, Secretary Wallace declared the question is now up to President Harding.

"It does not seem to me a question which I can discuss with propriety at this time," he said. "This whole question of department reorganization has been presented to the President, and the understanding has been that when the President is ready to consider the matter he will talk with the heads of the departments involved. Until that time I do not feel free to discuss the question. I am, of course, very much interested in the matter of reorganization insofar as it affects the activities which are an essential part of this department."

Secretary Wallace expressed the belief that the whole controversy would come to light. "I have no doubt," he said, "that in due time there will be ample opportunity for presentation of views on these matters."

Replying to Secretary Fall's criticism that the Department of Agriculture is party to a scheme to cut timber on the forest reserves for shipment to Asia, Secretary Wallace declared this charge is based on "an entire misunderstanding of facts."

Concerning work of the Department of Agriculture in Alaska, Secretary Wallace stated that in recent months he has talked with Alaskan experts, among whom are Gov. Scott Bone, Col. Frederick Mears, chairman of the Alaskan Engineering Commission, and Maj. James G. Steese, president of the Alaskan Board of Road Commissioners.

"In the course of conversations with them," Secretary Wallace said, "I took pains to ask them about the work of the Department of Agriculture in Alaska. All of them spoke of it in the most commendatory way. I asked them especially of the work of the Forest Service, and again they spoke in the highest terms of the manner in which the Forest Service is carrying on its work, and of the character of the men in charge."

#### WHAT OTHERS SAY

The Washington (D. C.) Herald says: "Commenting on the proposed transfer advocated by the Secretary of Interior, Senator Capper, leader of the farm bloc, said: 'Personally I am opposed to this transfer, and I believe every member of the farm bloc will oppose it. Regardless of what recommendation is made by the administration, we will fight this legislation. I do not think there is a chance that the Forestry Service transfer will be approved by Congress.'

"Senator Robinson, also a member of the farm bloc, expressed a like opinion. 'The Forest Service seems to be doing all right where it is. I do not know of anyone besides Secretary Fall who wants the transfer. I will oppose any legislation to place the service in the Interior Department.'

"Representative Gilbert N. Haugen, of Iowa, chairman of the House Agriculture Committee, said: 'This committee is opposed to the proposed transfer of the Forest Bureau. Unless efforts in that direction cease, I have assurance of the passage of a bill which will take the public domain from the Interior and place it under the Forest Service in the Department of Agriculture.'"

#### COMMENDS FORESTRY SERVICE

Delegate Dan Sutherland, of Alaska, in a newspaper interview defended the present administration of the Forest Service in Alaska. Commenting on the administration under Colonel Greeley, he commended the work done by the Forest Service.

"I don't think the service could be improved," he said. "Colonel Greeley seems to be a high type man and his bureau is giving fine service. I have talked with representatives of the largest paper companies in the United States relative to the leasing provisions allowed by the Forest Service, and they tell me it is liberal enough to accommodate them in every respect. As far as I have heard there has not been any criticism of the Forest Service in Alaska."

#### NEWSPAPER COMMENTS

Cleveland Plain Dealer—Secretary Fall, prickling with resentment because of the earnest efforts of American conservationists to prevent the transfer of forestry control from the Department of Agriculture to the Interior Department, complains that he is the target of propagandists. The Secretary is absolutely correct. There is a nation-wide propaganda against the transfer. It is the work of unselfish citizens whose sole motive is to preserve for future generations some considerable part of America's present forest wealth. No matter how considerable this part may be it will be less than it should be. Exploitation and reckless waste have only recently been checked, and this is due largely to the wisdom of President Roosevelt in transferring forest control from the political Department of the Interior to the non-political Department of Agriculture. The propaganda which now annoys Secretary Fall is inspired solely by the disinterested Americans who believe that Roosevelt's good work should not be undone, and who are zealously striving to save the forests from the devastation which would follow the return of political control.

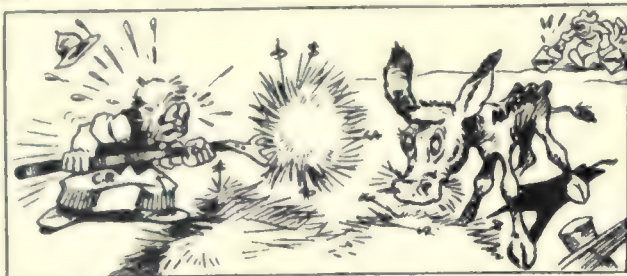
No one has attributed sinister motives to Secretary Fall. He doubtless believes that under the control of the Interior Department the forests would be adequately safeguarded. The fact remains that under the control of that department the forests were not safeguarded, while under the direction of the Department of Agriculture the work of forest conservation has reached a high plane of efficiency.

It is significant that practically all the propaganda is in opposition to the change. Those who advocate the transfer have refrained from trying to convince the public. Their incentives are political, and they have hoped that political arguments would be sufficient to persuade Congress. It is not unlikely that they would have been sufficient had it not been for the propaganda which has been disseminated by the American Forestry Association and other organizations devoted to conservation.

If the forestry discussion leads to an open breach between Secretary Fall and Secretary Wallace the president will be



## WONDERFUL FOR SOMEBODY



Secretary of the Interior Fall has a perfectly wonderful plan for Alaska.

He sees how a lot of money is to be made up there and he's going to let you in on it if he possibly can. He said so.

"If I can get the legislation through Congress," he says, "I propose to have a revolving fund created with which to develop the immense resources of Alaska.

"Oil wells, copper smelters, etc., will be developed and run by this department until they are strong enough to live without government aid. At that time they will be sold or leased for long periods to private capital."

See the point?

Mr. Fall will take your money and with it start things going in Alaska.

And then after you take the losses and the enterprises begin to make money he will let you step out and big business step in!

Isn't that nice?

"I am perfectly sincere in this," says Mr. Fall. No doubt he is.

What do you think about it?



### HOW THE SCRIPPS-McRAE PAPERS VIEW IT

The above cartoon and statement appeared in the Washington, D. C., Daily News and some of the twenty-eight other Scripps-McRae newspapers.

called upon to choose between partisan interests and the public interest.

There is good reason to hope that aroused and enlightened public sentiment will prevent the backward step which has been contemplated. Without the propaganda this sentiment could not have been created. Propaganda with an evil motive, whether it be veracious or mendacious, cannot accomplish a great deal in the United States. But propaganda which is based on public interest and which adheres strictly to the truth is a legitimate and useful method directing attention to pending legislation which is undesirable. The campaign to save the forests is an instance of propaganda at its best.

Columbus (Ohio) Dispatch—Secretary Fall has come out into the open in his effort to get the forestry management of the federal government out of the Department of Agriculture and into his own jurisdiction. In an ill-tempered letter to a member of the House, Secretary Fall states that he knows that his ideas as to the development of our material resources "do not meet with the approval of certain narrow-minded and

biased bureaucratic government officials and their followers."

This is simply an attempt to create the belief that opposition to the transfer of the forestry work is merely a part of the opposition to a more efficient reorganization of the entire executive branch of the government. If Secretary Fall's information on the whole forestry situation is so limited that he can entertain such an opinion, this alone would be enough to show that he is not the man into whose keeping the forestry interests of the country should be placed.

Secretary Fall ought to know that one of the difficulties which the administration is finding in getting proper public support for the reorganization plan is the fact that this plan is carrying the load of this proposed forestry transfer, contrary to the judgment of virtually everybody who has given serious attention to the problems of reforestation, and of the proper care an economic utilization of the forest areas still uncut. Many who would like to give their active influence to the cause of departmental reorganization are unable to do so, as long as that cause is linked with this wholly reactionary proposition.

The Washington Correspondent of the Philadelphia North American, on March 8 wrote—"The attempt by Secretary of the Interior Albert Fall to obtain control of the resources of Alaska, and also of the National Forests in the western states, has precipitated such a fight by conservationists throughout the country that unless President Harding shall intervene to stop the controversy within his own cabinet, and take a stand against the Fall proposal, the whole administration may be involved in a serious scandal. \* \* \* \* With the attacks upon him of which Secretary Fall complains, Mr. Pinchot has had nothing whatever to do. The attacks have resulted from activities of the American Forestry Association against Mr. Fall's demand that he be given control of Alaskan resources and forest reserves in the states. Even the Forestry Association has refrained from attacking Mr. Fall's motives, and has thus far confined its efforts to pointing out that the policy Mr. Fall advocates would be a bad one for the country."

The Washington Correspondent of the Philadelphia Evening Ledger, on March 7 wrote—"The bureaucratic aspects of the situation are much less important than its possible effects upon the preservation of the greatest forest area under the flag. Tree destruction has been one of the penalties of our civilization. It had been hoped that the exception to the course of thoughtless extravagance and waste might be recorded in Alaska.

"It is relatively immaterial what department wins the glory, provided tree wealth in the vast Northwest Territory is properly husbanded."

Ann Arbor (Mich.) Times News—"The time element is important in any consideration of the forestry problem. In a few years the growth of centuries can be cut away. That is why government officials should be very slow to make any change at Washington which would endanger the future of our national forests. If federal officials obey the demand that is heard in every section of the country they will leave the Forest Service alone.

"The proposed change has been and is being opposed by the Michigan Farm Bureau, by members of the faculty at the university, and by many organizations throughout the state and the United States.

"There is a demand for the standing timber, to be sure, on the part of men interested in the commercial phases of timber cutting, but there is a far greater demand that we look to the future before cutting down the comparatively small amount of timber that we still have standing.

"Leave the Forest Service alone."



# EDITORIAL

## SECRETARY FALL APPEALS FOR HELP

**I**N opposing the transfer of the National Forests of Alaska from the Forest Service, Department of Agriculture, to the Department of Interior, the American Forestry Association has brought down upon itself the wrath of Secretary of the Interior Albert B. Fall. Early in March, Secretary Fall appealed to the President to protect him from what he called "vicious propaganda" emanating from the American Forestry Association. This he followed with what appeared to be a carefully planned appeal for public support and sympathy by a series of statements and interviews given to the newspapers.

The American Forestry Association has no personal quarrel with Secretary Fall. It has not attacked him personally. It has no intention of doing so. But it does oppose and it will continue to oppose unequivocally such conservation proposals as it believes to be contrary to the public interest, whether they are sponsored by Secretary Fall or by someone else. It believes that many of Secretary Fall's alleged conservation policies, which as a public servant he is seeking to make the law of the land, are dangerous to the public welfare and, if enacted into law, would have the effect of setting back conservation to the days when national resources were considered fair prey for monopolistic and capitalistic interests.

For more than twenty years the people of the United States have fought to save what remains of the public land forests and to make them serve permanently all the people as well administered properties. The American Forestry Association, a voluntary organization of more than forty years' standing, has participated in that fight, always on the side of the public interests. It believes that the National Forests and the manner in which they are serving the public are the highest expression of the soundness of the conservation principles for which it stands. In answer to Secretary Fall's charges, it replies that it flings down the gauntlet in the face of any proposals which it believes will undermine or annul the National Forests and the conservation principles which they embody.

That the American Forestry Association is not alone in its distrust of Secretary Fall's conservation policies is evidenced by the wide public protest which has been raised against making him the custodian of the National Forests. Newspapers in all parts of the country have voiced their criticism and scores of organizations have passed resolutions protesting against turning the National Forests over to the Department of the Interior. The time is not yet when a public servant can win his case by appealing for public sympathy. If the public thinks he is wrong in principle, it will not support him.

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## SOME EXPLANATIONS SECRETARY FALL DID NOT MAKE

**I**N his quoted interviews with newspaper men last month, Secretary Fall made a number of statements which lacked explanation of fact. And in that respect they were misleading. He criticized the Department of Agriculture for permitting large quantities of high-grade lumber, including spruce for airplanes, to be shipped to Japan and China. "If I get control of the Forest Service," he is quoted as saying, "I promise that not another foot of that kind of material will reach Japan."

Either Secretary Fall does not know, or he failed to impress his interviewer with the fact that only about 3 per cent of the timber cut in Oregon and Washington is cut from the National Forests and that in the fiscal year 1920 the cut of lumber from the Indian forest reservations, under control of the Department of the Interior, in these two states exceeded slightly the cut from the National Forests. Although the cut from Indian reservations in Oregon and Washington during the fiscal year 1921 is reported as somewhat smaller, the fact remains that the contracts by which timber is sold and cut from the Indian reservations contain no clauses prohibiting

the exportation of lumber from the United States. The commercial purchaser of Indian forest stumpage is as free to export it to China and Japan as is the purchaser of National Forest stumpage.

At the present moment, Secretary Fall's department is advertising for sale 305,000,000 feet of timber in the Quinault Indian Reservation in Washington, under a sample contract which contains no clause prohibiting the purchaser from exporting the lumber, although the sale embraces 193,000,000 feet of cedar and 39,000,000 feet of spruce, species for which the export demand is greatest. Why does not Secretary Fall restrict the exportation of timber sold by his own department before asserting what he would do on this exportation question should he get control of the National Forests?

As for the total lumber cut in Washington and Oregon, almost 95 per cent is cut from private land, and Mr. Fall, as Secretary of Agriculture, would have no more authority to stop its exportation than he now has as Secretary of the Interior.



Much was made by the Interior Secretary of the fact that there are large areas of non-timbered lands in the National Forests. This is a thread-bare species of argument which has been made use of in practically every attack upon the National Forests. Anyone who is familiar with western mountain topography knows that there are treeless areas interspersed among the forests. Nature did not clothe the rocky mountain tops above timber line or the south slopes with timber. As to the areas at lower elevation, Secretary Fall might have enlightened the public by explaining, for example, that the Nebraska Forest, which probably contains less timber than any other National Forest, was established for the express purpose of reforestation by planting, and this the Forest Service is doing with marked success.

He might have explained that the Forest containing

the largest non-timbered area is the Tonto National Forest in the Southwest, and that this area was added a few years ago at the express request of the Department of the Interior to protect the watershed of the reservoir created by the Roosevelt Dam, upon which the great scope of country, including Phoenix and the Salt River Valley of Arizona, is dependent for its water.

The second largest addition of treeless land, Secretary Fall might have explained, was made by Congress to the Modoc Forest, in California, under pressure from the citizens of that state, who, exasperated by the failure of the Department of the Interior to regulate grazing on this land, demanded that it be placed under the jurisdiction of the Forest Service. Secretary Fall should know that in practically every case "there's a reason" why these non-timbered areas are in the National Forests.

## NEED OF A LAND POLICY FOR NORTHERN "CUT-OVERS"

**R**ECOGNITION of common interest and common problems in utilizing the 45,000,000 acres of cut-over land in Michigan, Minnesota and Wisconsin has brought into being a cooperative effort of almost unlimited possibilities in putting this empire of idle acres to its most productive use. This effort is expressed in the Tri-State Development Congress, an organization sponsored on a public service platform by representatives of the State universities and other state agencies and by individuals and organizations interested in the preservation and development of the states' land resources.

The Congress stands for more than the development of cut-over land. At its meeting in Milwaukee early in March it advocated a definite program of principles in which it took a stand on the preservation of existing forests, of game and fish and of the remaining recreational resources of these three states. The principles relating to forestry appear elsewhere in this issue of AMERICAN FORESTRY.

Anyone who sat through the deliberations of this Congress and listened to the diversified subjects presented could not fail to wonder why certain things which obviously ought to be done in the Lake States, are not done. Here, available to the markets of the world, are forty-five million acres of unused and uncared-for American soil, an area so large in the aggregate that the average mind cannot comprehend its vastness or its potential richness. Millions of acres are suitable for cultivation. Millions of acres are suitable for growing forests—a crop which yields wood, wood products, recreation, wild life and summer tourists. In addition there are several million acres in their natural forested state, which are being lumbered rapidly and ruthlessly, adding more loafing and unsightly acres to the already staggering total.

A few hundred thousand of these acres are being reclaimed each year by settlers but not enough to offset even the reduced area now cut over annually by the lumbermen. The remainder of it is for the most part the prey of fires which consume valuable young growth and burn out the soil fertility. Year after year this process of

cutting the forests clean and of burning the cutover areas has gone on. It is still going on and the people of the Lake States are forced more and more to send to Oregon and Washington for lumber which nature, with a little encouragement, will grow for them almost at their very doors. The wild life of the states is vanishing. Recreational areas are becoming scarcer and that at the beginning of an era when they can be capitalized to great advantage. Stripping of timber from the shores of beautiful inland lakes, which in years to come would draw thousands of tourists and millions of dollars to the states, goes on unabated.

So one wonders why the people of these states do not give nature a chance by providing adequate means for keeping out fire, for seeing that the remaining forests are cut under such regulations as will assure a second growth on forest lands, for protecting the lake shores and their natural recreation areas against devastation and ruination, for establishing the value of these lands for timber production, where this is their chief value or where they will not be needed for agriculture before a timber crop can be grown. It is to the states' permanent interest to do this because nature will rapidly reclothe many millions of these acres with timber if not dispossessed by fire, confiscatory taxes and ignorance of the handling of timberlands.

There was a time when people from other parts of the country turned to the Lake States for lumber. Today conditions are reversed and the lesson is open for all to read. These three states are now spending millions of dollars in building magnificent road systems, which it is expected will in part be written off by thousands of automobile tourists drawn north by good roads and the call of the north woods. But unless the people of Michigan, Minnesota and Wisconsin look better to the protection of their remaining forests and lakes and to the reforestation of their forest lands, their tourist business will go the way of their lumber business. And that, like their unproductive timberlands, is of concern to the whole middle west because these northern forests and



lakes should be for all time the summer playground of the middle west.

Each of these states, to be sure, is proceeding in its own way along forestry lines, but their efforts are inadequate. They lack stability and the vision of a long-time, definite program. In some cases they are governed by political expediency. The basic problems of land utilization are much the same in all three states and the Tri-

State Development Congress provides the machinery for uniting and directing efforts and for crystallizing public sentiment on the thing most needed, the formulation and adoption of a definite land policy based on broad, public interests. That policy must give forestry its proper place in the development of the small farm unit as well as in large-scale reforestation of lands suitable only for timber production.

## NEW YORK'S DEPLETED FOREST WEALTH

**W**E are wont to think of seven years in the life of the nation, or of the individual states which comprise it, as no time at all. But seven years are seven years, and the extent to which forest depletion in that brief span deepens its channels in the economic bed rock of a great state, once the leader of all states in lumber production, is clearly revealed in a recent publication entitled "Wood-Using Industries of New York."

The study upon which the report is based was made in 1919 by the New York State College of Forestry in co-operation with the United States Forest Service. The report is in the nature of a re-inventory of New York's wood-using situation, the original inventory having been made in 1912.

One of the most startling things brought out by this report is that in the short space of seven years from 1912 to 1919 the amount of lumber which the forests of New York supplied to the wood-working industries of the state decreased 65 per cent. During the same period, the total number of firms engaged in wood-using industries in New York decreased 35 per cent. While a variety of conditions is undoubtedly responsible for this decrease of 35 per cent, it would be interesting to know to just what extent the waning wood productive power of New York's forests has been responsible for this writing out of business, in less than a decade, of more than a third of the wood-using industries of the state.

Some idea of the weakened power of the state with respect to lumber production may be gained from the statement that in the twelve years between 1907 and 1919 the New York lumber cut decreased 59 per cent of its former volume. Trailing forest depletion still further backward, we are told that in 1869 the per capita production of lumber by the state of New York was 300 feet, and that in 1918 it had shrunk to 30 feet.

New York, at one time, produced 20 per cent of the total lumber cut of the nation. It exported lumber to neighboring states in the east and to more distant states in the middle west. But as the years have sped by, seven by seven, witness to what economic dependency forest depletion has brought this great state:

"In 1919, New York manufacturers paid approximately \$11,000,000 for lumber grown in New York, while the lumber imported cost \$66,000,000.

"Sixty-six millions of dollars were sent out from the state for material for which fully two-thirds could be grown to equal or better advantage in New York.

"Some of the imported lumber came 3,000 miles by rail. Every

mile of hauling added to the cost of finished products.

"Every foot of lumber, every cord of pulpwood, imported cost more because of this wasteful expenditure of coal and labor in hauling.

"Men could no longer afford to build or buy wooden houses, the cheapest form of dwelling.

"Newspapers had to restrict operation because of the scarcity of newsprint in a state once famous for its spruce.

"Directly or indirectly, every commodity of life cost more because of the depleted supply of forest products.

"Every citizen paid and is still paying—and for a long time will continue to pay—an unnecessarily large part of his income for shelter and food and clothing, furniture, fuel, amusements, and transportation—necessaries and luxuries alike—because of the depletion of New York's forests which have placed her in an economically dependent situation. She can no longer command one of the fundamental necessities of human existence and happiness."

The demand for wood by New York's industries, the report states, is from three to five times as much as is now being grown in the state. It is these wood-using industries, representing millions of dollars of invested capital and thousands of home-owning wage earners, which are most directly concerned.

The State of New York is rich in lands suitable for timber production. It contains within its boundaries upwards of 14,000,000 acres, or nearly half the lands of the state, which are suitable for forests and which eventually should be devoted to growing forests. At the present time 62 per cent of this land is virtually denuded. It contains material suitable neither for lumber nor pulp. The best it can supply is fuel and acid wood. But under management, these lands, the report points out, are capable of producing enough timber annually to more than meet the needs of the state's secondary wood-using industries.

In the face of these conditions, now admittedly bad and growing worse year by year, what is needed? "Above all," the report states, "there is need of the driving power of a united public opinion, determined that New York shall not suffer for the lack of forests for all her future needs." And the report makes it clear that the people of the state of New York have it within their hands to serve their own needs and to protect their own wood-using industries and wage earners by demanding a comprehensive forest program based upon a thoroughgoing study of the state's forest lands.

Such a program, it is indicated, would necessarily call for an expansion of the state's forest activities in acquiring public forests, reforestation, forest protection, the promotion of better handling of wood lots, better methods of logging, milling and utilization, revision of



old laws along lines which will stimulate and encourage the practice of forestry.

Viewing what has happened in seven years, action is clearly the great need. Failing in a comprehensive program, the report concludes: "There is no hope of prolonging the use of the present day timber to bridge the gap while the seedlings of today are growing into the merchantable timber of the future."

The first thirty pages of the report tell the story of New York's situation in a lucid and popular way. They should be read, not only by every citizen of New York,

who is interested in the welfare of his state, his community and his family, but by citizens of other important forest-landed states, because they portray with a substantial background of facts a definite picture of the insidious progress of forest depletion, once it has gullied its courses.

New York is the first state in which a re-inventory of the wood-using industries has been made. Several other states are now engaged in similar work.

The more states that will hold the stop-watch, so to speak, on forest depletion, the more clearly will we be able to gauge the national effects of its progress.

## THE "FATHER OF PENNSYLVANIA FORESTRY" RETIRES

**A**FTER a service of almost forty years, Dr. Joseph Trimble Rothrock recently resigned as a member of the Pennsylvania Forestry Commission. He has had a remarkably active life, which has enriched both his State and the Nation, and he now seeks a well-earned rest at the age of eighty-three.

American forestry owes much to Dr. Rothrock. His name is woven into its history. As a pioneer in the cause of forestry he has labored long and faithfully and he may today take much credit to himself for the progress of forestry, not only in Pennsylvania but throughout the United States. This the foresters of America and thousands of citizens in and out of his own state concede him spontaneously.

Dr. Rothrock is known as the "Father of Pennsylvania Forestry." His efforts to save "Penn's Woods" date back for more than forty years. He awakened the people of the Keystone State to an appreciation of their forests by

traveling up and down the state giving illustrated lectures on forestry. Due largely to his efforts, the Pennsylvania legislature created in 1895 the Forestry Commission and Dr. Rothrock was placed in charge of the State's forestry work.

Under his guidance, the State rapidly forged ahead in forestry. Within ten years after he took office, it acquired half a million acres of forest land, established a school of forestry and developed a state organization to assist private timber owners in the handling of the forest lands. In recognition of his long and inspiring work in behalf of "Penn's Woods" a memorial grove of eighty trees was planted in the Franklin County forest preserve on his 80th birthday. AMERICAN FORESTRY expresses the hope that Dr. Rothrock may witness many more years of forestry progress, behind which his name will always stand as a rock of inspiration and accomplishment.

## HELP SAVE THE GIANT SEQUOIAS

**T**HERE is pending in Congress a bill which should have the active support of every member of the American Forestry Association because it would preserve to the people of the United States many of the largest and most majestic sequoias of California and the scenic wonders of the Kings and Kern Rivers of the high Sierra Nevada Mountains. The bill is known as H. R. 7452, introduced by Congressman Barbour. It provides for the enlargement of the Sequoia National Park to embrace some 600,000 acres of the high Sierra Mountains which have long been considered as of park status. Under the provisions of the Bill, the name of the enlarged park, which would contain a total of over 700,000 acres, would be the Roosevelt-Sequoia National Park, as a tribute to Theodore Roosevelt.

Although the added park area would be taken from the Sequoia National Forest, the boundaries have been agreed upon by the Forest Service and the Park Service, the Forester taking the position that "the combination

of mountain scenery, including the highest portions of the Sierras and three of the greatest and most impressive of the Sierra canyons, with the giant forests of redwood, gives this area as a whole outstanding national importance for recreational and aesthetic value," which outweighs its value for commercial purposes. The inclusion of the scenic wonders of the Kings and Kern Rivers have long been urged by the Sierra Club of California, their beauties having been pointed out in 1891 by John Muir.

The passage of the Barbour Bill will save for the present and future generations some of the most majestic forests of the world, and many beautiful canyons, rivers and lakes. The added area proposed lies above 5,000 feet elevation and contains ten of the fifty-six peaks in the United States, excluding Alaska, over 14,000 feet in elevation. For mountain climbing and trout fishing the area is a paradise. The bill is pending on the House calendar, and prompt action is urged in support of it.



# SIMPLE FOREST CONSERVATION

By Albert V. S. Pulling

Professor of Forestry, University of New Brunswick

**F**ORESTRY has been, recently, a subject for lengthy discussion. Conservation is its aim, and prevention of timber famine. Most civilized countries are importing both pulp and timber. The exceptions are Sweden, Norway, Russia, Canada, the United States, and some of the new States of Central Europe. In this country it now costs more to raise a tree than that tree is worth for lumber. Hence, lumber prices are going up when we have to grow all lumber like field crops. We must defer this condition as long as possible. It is my purpose to mention a few principles that will, I believe, help the citizen to solve the forestry problem.

The shingle is probably the best known roof covering, and, by virtue of its lightness, durability and beauty, it will long remain a favorite on this continent. Shingle siding is also very popular on the modern house; the thatched shingle roof is coming into favor, and wooden shingle production has been booming in spite of the competition of prepared roofings.

But the humble shingle has been a badly abused bit of lumber! Our grandfathers split out "shakes" of white

pine or white cedar, shaved them with a draw-shave, and nailed them to the roof with great wrought iron nails, made, perhaps, in a local shop. Fine roofs they were. I am familiar with one steep-roofed old "Dutch" barn in the Hudson Valley, where those hand-shaved shakes, three feet long, an inch thick at the butt, and laid a foot to the weather, did duty for over 85 years. The butts were worn as thin as paper, when last observed, but the big wrought nails were still solid in the sheathing boards, *and the roof did not leak*. Only the heart-wood, we are told, of the fine old growth "pumpkin" pine was used for this purpose and its weather-resisting qualities were remarkable.

Yet pine is an inferior shingle wood. It is much surpassed by our Eastern white cedar (*Thuja occidentalis*), common in Maine and New Brunswick, the Western red cedar (*Thuja plicata*) and the Southern bald cypress (*Taxodium distichum*). Still, many of our shingles rot quickly. This is principally due to two reasons; first that the good grades of white cedar are getting scarce, and much sapwood is going into shingles; second, the



CYPRESS

WHITE CEDAR

RED CEDAR

The source from which most of the wooden shingles come. These are the three species most used in shingle manufacture—the Cypress of "Rite Grade" fame, the White Cedar, all too scarce now, and the Western Red, one of the finest of shingle woods.





Courtesy Clear Lake Lumber Company.

#### A TYPICAL BUNDLE OF WOOD SHINGLES

Than which there is, of course, no better. The place of the wood shingle has been established through long use, won through its own qualities of lightness, durability and beauty.

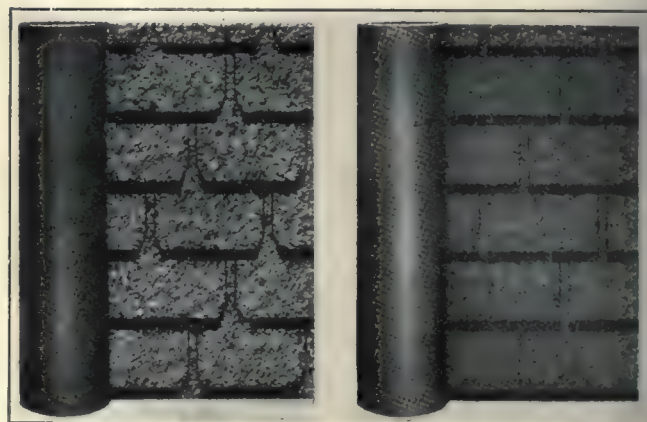
greater number of shingles laid in the last three decades were fastened with abominable wire nails. Old fashioned wrought nails did not rust easily, but we do not have to go back to wrought nails. Modern zinc dipped nails are better than anything that could be made by an 1830 nailer, and zinc dipped nails will double the life of ordinary shingles. Of course, pure zinc or pure copper nails are even better, but are too expensive, and the zinc coated nails are guaranteed by the makers to last as long as the best shingles. So-called "galvanized" nails are better than wire, but not good enough for good shingles.

So much for nails, but shingle conservation does not end there. Another difficulty was that shingles, in order to be cheap, were made too thin, and sometimes too short. This is particularly true in the Northeast. So far as the writer knows, all are made 16 inches long, and many are so thin that they curl on the roof. The Western shingles, made from Western red cedar, are made 16, 18 and 24 inches long, and several thicknesses. Thickness is usually measured by the number of inches in a given number of butts. Five butts to two and one-fourth inches are about the best grade of 18-inch shingles.

They cost more than inferior grades, and are worth more. These good shingles, I believe, make the best roofing obtainable. Siding lasts better, and cheaper stock may be used with economic safety. Concerning other species of shingle wood, little need be said. I have seen white pine, yellow pine and even spruce and fir shingles. These are useful for certain temporary work, but are not popular for good buildings. Some good species, as the coast white cedar (*Chamaecyparis thyoides*) are graded with other species. Numerous Western trees, as the redwood, make fine timber for shingles, but they are not yet common, especially in the eastern market.

The cedar and cypress are common in all markets. Dealers will supply prospective buyers with information published by such organizations as the Southern Cypress Association, and the Western Associations that market "Rite Grade Inspected" shingles. Good shingles should last over 50 years. As siding, they should last twice or three times that long, without preservative treatment.

The question of preservation is the last severe abuse



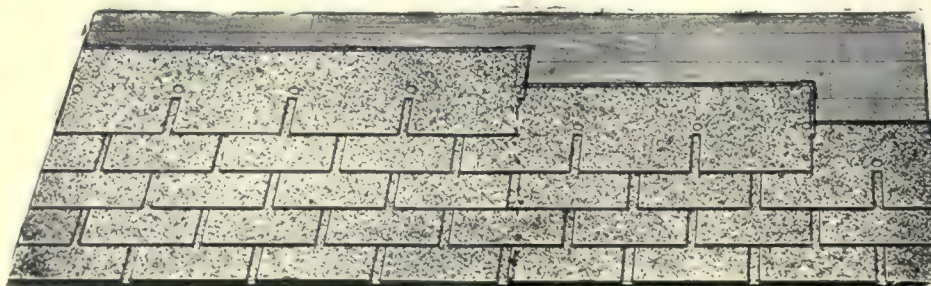
Courtesy Patent Vulcanite Roofing Company.

#### SUBSTITUTE FOR THE WOOD SHINGLE

This vulcanite roofing is made in rolls for convenience in handling and application and it is used with great success.

of shingles we will consider. It consists of painting or staining after the roof is laid. For preservation, shingles should be dipped before laying, and never painted. Millions of shingles are rotted annually by misuse of paint. The weakest point in every shingle is the joint where the over-lapping shingle touches it. Rot usually begins in

the joint, due to concentration of moisture. A good preservative protects this joint, but painting after laying generally results in the paint layer reaching to the joint but not under it. Moisture runs down the shingle and is



Courtesy Barber and Ross, Washington, D. C.

#### COMPOSITION SHINGLES LAID IN STRIPS

Substitutes for wooden shingles are widely used and a good argument in favor of these Rex shingles, where a substitute for the wood shingle is sought, is that they are made in strips of four, a means of conserving nails and labor.





A PILE OF PULPWOOD IN MAINE

Our own pulpwood supply is diminishing rapidly and we now import one-third of what we use from Canada—a deplorable state of affairs, calling for vigorous corrective measures.

held by the paint. The result is that decay goes on faster than it would if the shingle were bare. A thin oil stain has the same effect, but to a lesser extent. Some form of creosote, linseed oil or zinc chloride dip will make a good preservative. When siding shingles have been dipped, a brush coat occasionally in later years, will keep the building looking fresh, and will benefit the roof, for the joints were covered in the beginning. I believe that a roof should never be brush-stained, and that dipping roof shingles is usually doubtful economy unless a very good grade of dip is used. Creosote is perhaps the best preservative. Of course the appearance of a house roof is almost as important as its durability, and very artistic effects may be obtained with stained shingles.

In dipping shingles, we will say 18-inch shingles, about 12 inches of the butt should be

covered. About twice the length that a shingle is to be laid to the weather is about the right depth to dip. With the right arrangement of tub and a draining trough to put the shingles in after staining, dipping is a fairly rapid process, but expensive. For the shingles will soak up an astonishing amount of stain.

Many wood shingle substitutes are in use with varying success. Slate is everlasting, but occasionally splits from frost in our severe changes of climate. Metal, unless well tinned or galvanized, may rust. Besides, both metal and slate are very hot in summer and cold in winter. The various prepared roofings, frequently called fireproof, are good, bad and indifferent. The consumer generally gets about what he pays for. Some prepared material dries out and becomes highly inflam-



DENSE YOUNG GROWTH OF SPRUCE ON AN OLD PASTURE LAND

This is the only thing which will turn back the tide of the paper famine—regrowth of the species valuable for its manufacture—a good use for some of our thousands of “idle acres.”





A FINE STAND OF SECOND GROWTH SPRUCE

We face the stark necessity of rehabilitating our "paper woods" because of the terrific drain made upon them by the public demand for paper and then more paper.

mable after a few years on the roof, though it was originally fireproof. An asbestos roof must remain fireproof. I have seen very unsatisfactory results from prepared roofings. We believe that they are not comparable to shingles. Since they are mostly made of wood pulp, their effect on the timber supply cannot be great.

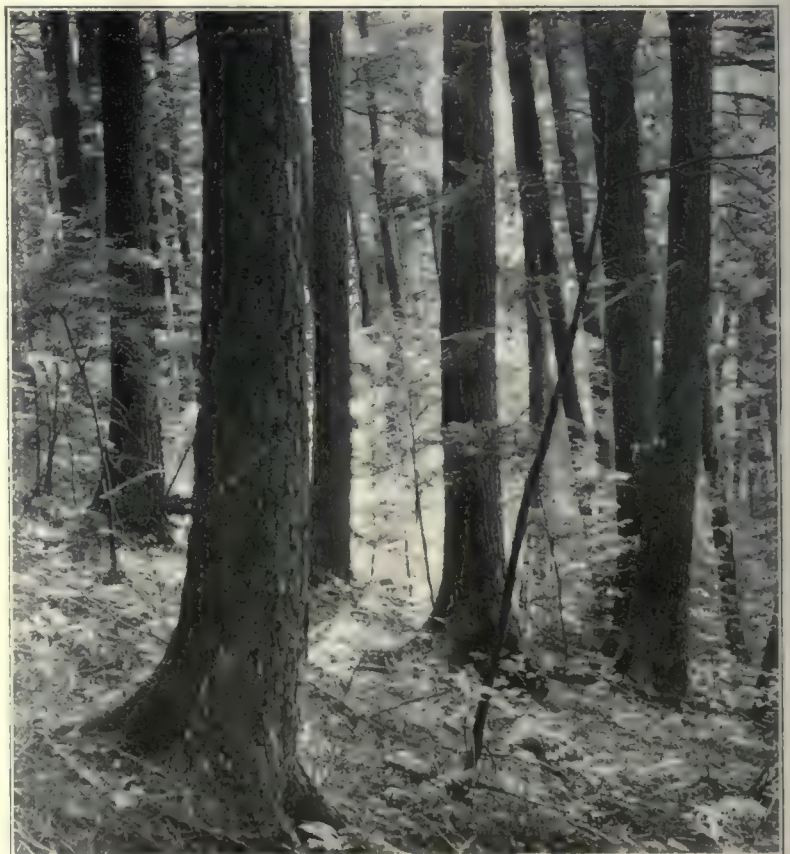
The citizens of Canada and the United States are more extravagant with paper than any other people of the earth. Wood for paper pulp is getting scarce. We are importing one-third of our pulp supply from Canada, and, although Canada has great supplies of timber, there have been terrible fire ravages in the Dominion and very recently the spruce bud-moth has injured thousands of square miles of Canada's pulp forests. We are not yet facing a lumber famine, but a paper famine is right before us, although conditions indicate that it will be averted.

News-print paper is the great scarcity and the great waste. American newspapers are from three to ten times the size of European papers, yet the Old Country people seem to get the news. Most papers could be reduced one-half, and there would

still be as much news and advertising as one could read. That would be a simple method of doubling the supply of news-print. Only public sentiment would not stand for it. But necessity will force it in time. Many a thoughtful citizen would hesitate to ruthlessly cut a fine spruce, but he buys many such trees in the form of rather worthless Sunday supplements, and throws them, half read, into the ash barrel.

We waste paper in numerous other ways. Wrapping more paper around food in a tin can with a paper label is an example. We hope it will never be necessary for us to emulate the French and carry a loaf of bread home, exposed to street germs, with no covering whatever, but we are headed for that condition by 1950 if our population continues to increase and we continue our extravagance. Books and magazines use much paper and many modern publications are of questionable worth. But the public demands this reading and will continue to get it until the poorer publications are forced out by the high prices that come with acute scarcity.

There are many hopeful signs. Things are not as bad as some of the calamity howlers would make us believe. Alaska is now known to have a large supply of pulpwood. The use of certain inferior broad leaf species, as the poplars, and the reforestation of spruce are subjects on which foresters, engineers and paper manufacturers are diligently working. But whether or not public demand will denude the pulp forests before the



A STAND OF PURE HEMLOCK IN NEW YORK

This highly valuable commercial wood goes into the making of boardwalks and other uses where hardness and strength, durability and accessibility are important factors.





A BIG PULP BEATER AT THE FOREST PRODUCTS LABORATORY

The 60-pound beater shown in the picture is typical of the beater installations used under commercial conditions. Extensive experiments are continually under way to ascertain the most conservative and practical means of manufacture, and science has already lent generous aid to conservation in the making of paper.

problem of increased permanent production is solved, remains an open question.

Improper painting is another cause of economic loss as great or greater than the causes we have mentioned. In very rare cases, paint injures wood, as the shingles mentioned above. Neglect of painting is the cause of the deterioration and waste of millions of dollars worth of wood. For very temporary work, paint may be superfluous. It is rarely or never that one cannot afford to paint. I recall a story concerning some buildings newly erected by a small New England railroad. A friend asked the local manager:

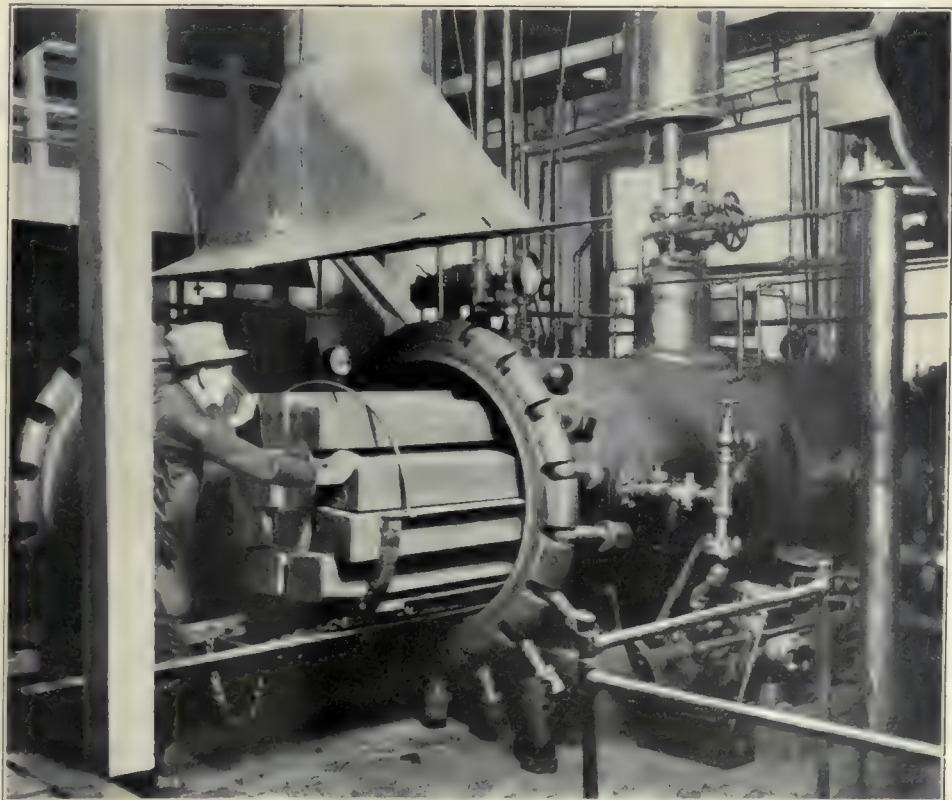
"Brown, why don't you have those buildings painted?"

"Can't afford it," was the immediate reply.

"But you know it would be more economical," the friend persisted.

"Smith," said the manager, "don't you know that this road is so damn poor that it can't afford to be economical?"

If one can afford to be economical, paint, made of white lead and linseed oil, is a wonderful preservative. It is an economic crime to leave good houses unpainted, or poorly painted. If a frame building is well cared for it will last several hundred years, or longer, for all we know in this country. Wood containing 10 per cent of moisture or less will never rot. At any rate, it will rot no sooner than stone will crumble. Air dry wood contains not over 15 per cent of moisture, usually. The dryer and hotter the weather the dryer the wood. Thus, dry weather is the time for outside painting. A fairly air proof and damp proof layer of paint keeps the wood from absorbing moisture from



TREATING RAILROAD TIES AT THE FOREST PRODUCTS LABORATORY.

About 140 million cross ties are used annually by the railroads in the United States. Of these hardly 30% are given a preservative treatment, and a good preservative treatment should at least double the life of the tie, as far as decay is concerned. One can readily perceive the enormous annual saving which might be effected in this way.



the outside. The inside of most buildings are fairly dry anyway. The paint manufacturers' slogan: "Save the surface and you save all," is true to the last syllable.

There are some paint substitutes on the market that are quite valuable. They are known as "cold water" paint and are applied like ordinary lime or "whitewash." Lime is little used in our country, but it is an excellent antiseptic and will kill decay bacteria in wood. There are many hand hewn timber houses in the agricultural sections of Quebec that are preserved by occasional lime washes. Many were built by the great-grandfathers of the present occupants. The spruce timbers are as solid as concrete, and I fancy they will last forever, unless the progressive habitants discard their picturesque homes for more modern ones. Of course lime does not look very well, but it is cheap, effective and certainly looks better than nothing.

The public cannot particularly influence the cross-tie problem, but it is a question of more than passing interest. There are over 300,000 miles of railway in Canada and the United States, and there are 2,500 to 3,000 ties to each mile of road. Until recently, very few ties were given preservative treatment. An untreated tie will last about seven years. This means some 400 ties per annum are required to keep each mile of road in repair, or 120 million ties. They would make four billion board feet of lumber. We disapprove of statistical juggling, but the magnitude of this lumber pile can perhaps be visualized if we compute that it would lay a boardwalk one inch thick and 28 feet wide around the earth at the equator, and still have considerable left over.

Railways have been experimenting with steel, concrete, and various wood substitutes, but they have been unable to eliminate the wooden tie. There is no reason, however, for ties being so short lived. Ties properly treated with creosote or other good preservative, will last 14 years at least, and thus cut tie consumption in two.

I have observed thousands of ties on French railroads. Nearly all are impregnated oak. A copper tag is attached to each tie. On it is a number that can be looked up in the office and will tell the date of laying, the method of impregnation, and any important technical details. The French engineers can thus check different processes, and continuously make improvements. Ordinary spiking is not done abroad either and ties are correspondingly conserved. The rails are laid on a plate or "chair" that is firmly bolted to the wood. The wear is thus iron on iron rather than iron on wood.

Certain tie woods do not need impregnation. Chestnut and black locust are the best known of these durable species. But the chestnut has been swept off the greater part of its range by the terrible chestnut blight, and the locust borer has so infested the locust, that it too is getting restricted in commercial range. Other enduring woods, as the cedars, can be used without preservatives, but they are getting scarce too, and are so soft that the rails shear them off long before the timber decays. The red quebracho of South America is said to last 30 years as a tie. It is very rich in tannin and very durable. But

we cannot import ties profitably in our generation. We should rather increase our exports in the South. It is probable that the strong and fast growing loblolly pine will solve the tie problem in the East, jack pine (*Pinus divaricata*) is now the favorite in Canada, and perhaps the lodgepole pine will be the solution in the West. But they are all short-lived ties without the help of a preservation plant.

Common methods of getting out ties is another source of waste. Ties are still hewed instead of being sawed in some out-of-the-way places, and all the wood that is hewed off is wasted. This debris remains in the woods to the injury of reproduction. If the ties were sawed, much valuable material could be taken from the tie slabs that would otherwise be a total loss.

An effort is now being made by certain large sales corporations, to assist the public in buying the right wood for the purpose for which it will be used. Many believe that there is little or no good lumber on the market at the present time. This is an old fashioned and erroneous idea for there is now a far larger assortment of better timber for sale than there ever was before on this continent, with the possible exception of some of the better hard-woods. Good grades of oak, ash, and walnut are not as common as they were, but we have a variety of woods brought near by good transportation that more than make up this shortage. The proper timber is available if you go after it, and make the construction man use what you tell him to. It is not as simple as it was when white pine was the only construction timber that was in common use, with white oak and tulip poplar as the only available hardwoods. Wood construction was merely fool proof; now care must be used for good results. It is useless to lament, when we look at a fine old Colonial house, that we can't get the lumber to build such homes now-a-days. We have *better* lumber and *better* material than was ever put into any Colonial building. But we have got to pay for it and ask for what we want rather than take what we can get at the cheapest rate offered.

Some excellent advertising by one of these timber sales companies recently appeared. They offer the services of experts to assist in the choice of timber. The company in question handles all kinds of construction timber, so they were not trying to favor any particular kind. It was mentioned that certain board walks at some of the Atlantic resorts had been in use for over 25 years. Others had to be rebuilt every 5 years, or 10 years. Obviously, the right wood was used in some cases, the wrong timber in many others. The company proposed to tell every prospective purchaser just what he should use for his particular work. This is admirable advertising, for few consumers have a good working knowledge of timber.

To return to the example of the board walks. I have a hazy memory of the walks at Asbury Park and Atlantic City. The last time I saw them I could not have told what they were, for wood was wood and that was the extent of my knowledge in that line. But it would



be a fair guess to venture that those durable walks were made of our common hemlock. Several other species might have been used, but hemlock was cheap, strong, hard enough to stand traffic, easily available from the nearby forests of Pennsylvania, and we believe it capable of lasting 25 years in a board walk. The durable material was probably used largely from chance, or from the superior knowledge of the builder. Why did the builder use hemlock instead of the equally cheap and

mention the ones that seem to be the most valuable.

The United States Forest Service and in Canada, the Dominion Forestry Branch, employ experts and publish bulletins on timber. In case the Federal Government does not supply the need, State or Provincial Forest Departments may be called on. All of the North-eastern States have State Foresters with staffs of experts. In fact nearly all states are getting some sort of an organization



A MERCHANTABLE WINDFALL ON CUT-OVER LAND

This is a shocking example of careless lumbering as the tree was within 300 feet of a public highway and within one-fourth mile of the logging camp. Three logs, containing 100 board feet, Doyle rule, could have been cut from this tree and the logs would have yielded 200 board feet of lumber. Such trees, which are not-wind firm, should be cut when the area is being logged, as a conservative measure.

more easily worked balsam fir that could readily have been brought from Maine or New Brunswick and put into board walks, to rot in a few years? Perhaps this did occur in many cases to the detriment of the owners profits.

We are just beginning to learn about timber. Until the last 20 years, we had few experts and no source of knowledge that the public could turn to. Little can be written in this small space that will give exact knowledge of the subject, but next to specific knowledge, it is important to know where that knowledge can be obtained. There are many sources. We will

to assist in this kind of work. The Provinces of Quebec, New Brunswick, Ontario, and British Columbia have well organized Forest Services. There is a Dominion Forest Products Laboratory at McGill University and a United States Forest Products Laboratory at the University of Wisconsin. These laboratories belong to the public. Then consider the various University Forestry Departments and State Forestry Colleges. In some cases, the colleges maintain a well equipped Extension Department with the sole aim of assisting the public in knowledge of forestry. This is especially true of New York, and New York State is a huge factor in the timber market.



# FORESTRY IN CONNECTICUT

By Theodore S. Woolsey, Jr.

IT is interesting to contrast the lack of progress in actual forest management in an Eastern state like Connecticut with the practical forestry actually accomplished in the western states. The reason is obvious. In the East the land is in private hands and has to be bought by the public before the public can practice forestry. In the West the great nucleus of National Forests, intelligently and skillfully managed, gives all the western states a tremendous advantage in that the land could be secured by mere proclamation rather than by purchase. But states like Connecticut are fast awakening to the necessity for economic forest production. Yet it must be admitted that thus far, even after two decades of state forest administration, the soil has hardly been scratched. When Austin F. Hawes, the new State Forester, took office last July, the State forests amounted to 4,452 acres. During the past seven months this has been increased to 7,132 acres, 1,200 acres of which (Mohawk Tract) were received as a gift from the White Memorial Foundation. Practically all the appropriation for the purchase of new forests has been expended and the small area of forests only serves to show how much larger amounts are necessary in order to secure an adequate area under public management. It would certainly be reasonable to have at least 100,000 acres in Connecticut state forests and probably more. It is obviously ridiculous to employ a State Forester *with an assistant* to manage 7,000 acres! But of course he has other duties the most important of which is fire prevention. On January 1, 1922 a new fire warden law went into effect and has enabled a thorough reorganization of the fire service. Fire wardens, instead of being appointed by the selectmen, are now appointed by the State Forester, and the State has been divided into about 160 districts, each under a town or district warden. During the coming season, plans have been made for five look-out stations and eight fire fighting equipment stations. All wardens will be supplied with fire fighting equipment. The State Forester has also completed a compilation entitled, "Connecticut Laws Relating to Forests and Forestry, 1922," which may be secured by applying to the State Forester, Hartford, Connecticut. The State Forester has also commenced in collaboration with the extension service of the Connecticut Agricultural College a special Census on the use of lumber and wood on the farm along the following lines:

1. Wood for fuel.
  - a. How many cords do you burn annually?
  - b. How much of this comes from your own land?
2. Fence Posts.
  - a. How many posts do you use annually?
  - b. How many of these come from your own land?
3. Lumber for repairs.

What did you use last year for repairs or for constructing minor buildings like sheds, out-house, etc., in the way of

- a. Lumber,
  - b. Shingles,
  - c. Clapboards,
  - d. How much of the above came from your farm?
  - e. Of the supplies purchased give variety, and average price for each.
4. a. Do you use lumber or wood for other special purposes, as for props for tobacco shades, etc.?
- b. If so, what dimensions and varieties, and prices paid?

Mr. W. O. Filley, Former State Forester, is now Forester of the Connecticut Agricultural Experiment Station. As yet it appears that sufficient time has not elapsed since the reorganization last July for the completion of any particular projects. As a matter of fact, Mr. Filley is the handy man in Connecticut, who is continually assisting and cooperating with others. He is a member of the State Board, which employs the State Forester and assists in handling the forestry minutes of the Board.

The Connecticut Forestry Association under President Wells has made some progress during the past six months. The membership has increased more than 100 per cent and the Association is in a much stronger position financially and has definitely adopted the policy of holding as permanent investments all money contributed by patrons and life members. The success in the membership drive was largely due to splendid addresses by Gifford Pinchot in September and by Colonel Greeley in December on "The Use of Idle Land." In order to encourage forestation and thinnings in Litchfield County, the following prizes have been offered, *the first of the kind in the United States*:

## CASH PRIZE FOR THINNING COMPETITION

A prize of \$25.00 will be given for the best executed thinning in a pine stand.

Contestants must be taxpayers (corporations excluded) in Litchfield County, Connecticut.

The thinning must be made between Sept. 1, 1921 and March 1, 1923.

All stands entered for the competition will be examined by the Thinnings Committee of the Connecticut Forestry Association between March 1 and May 15, 1923.

Contestants may be required to show the Committee the thinned stand.

Award of the prize will be made at a meeting of the Association in 1923.

The number of stands which can be entered by one contestant is unlimited.

To enter the competition send your name and address with the location of the thinned stand to:—

## THINNINGS COMMITTEE,

Connecticut Forestry Association, 242 Prospect Street, New Haven, Conn.

(Continued on page 243.)



# FOREST RECREATION DEPARTMENT

Arthur H. Carhart, Editor

## Producing the Recreation Commodity

A MOTOR car, stripped of every bit of finish, is a common sight in almost any community. The driver perches upon the gas tank or a box and the poor nude thing looks like a sprawley giant bug. There is no comfort about it, no cushions, no top, no body even to hold one in on the curves.

Such a car is in about the relative shape of the recreation plant of our National Forests. It is a motor vehicle, it can be ridden, but there is no production of the real joy of motoring in clinging to the shaky seat with nothing to protect the rider from mud, rain, or a spill from his perch. A car in this predicament needs a body, floor, mud guards, a wind shield, cushions, a top, sides, and other things to make it a comfortable motor car. The recreation facilities in our forests need improvement to produce recreation as much as the stripped car needs further improvement to produce motoring.

Or the recreation situation might be likened to a great

cotton goods factory, which is incomplete. The walls are substantial, the bases for giant machines and looms are all built and fitted with bolts, shafting is ready to carry power from the central plant to all of the machines but there is no chance of a thread of cotton being manufactured into something useful because only the foundation is there and there are no spinning machines to produce the cotton fabric.

Our Forest Recreation Manufacturing plant is lacking in machines to produce recreation fabric. The belting, machine bases, site and structure all exist, but there is a dearth of the units which are essential in manufacturing the recreational commodity.

For the site we have all forests. For the belting and shafting there is the present road and trail system of the forest. The machine bases are camp, cabin and hotel sites. The structure in which the plant is located is God's woodlands. But the machines are not present and the



THE CRESTONE NEEDLES—SAN ISABEL FOREST

Such forest beauties as these are not worth writing of unless there is some real provision made to make them usable. Trails, shelters, protection measures, signs and other recreation producing necessities are needed to make these produce the most possible.



forest recreation plant stands partially idle, the recreation fabric which is produced being a result of "spinning wheel age" methods.

In an earlier article the minimum needs for protection in forest camps was outlined. It is the purpose of this article to point out the lack in our Forests of real recreation producing machinery. For the Forests stand today as partially empty factory buildings ready to produce an excellent quality of recreation in large quantities at a minimum of operative costs if—the machinery is installed.

Taking stock of what should be present to start the genuine production of recreation we find that the first real need is men to handle the work. Landscape architects to plan the recreation machinery are as necessary in the scheme of recreational development in the forests as engineers to plan and construct roads, lawyers to handle the problems of law, mineral examiners to investigate claims and foresters to supervise proper cutting and planting. No one would go into the business of producing clothing on a large scale without a practical and experienced, well-trained master tailor. The recreation business is better left alone than to have some half-way, ill-planned development going on under the direction of men not qualified as recreation engineers.

In the factory, under improper guidance, the stamp machine may be wrongly fastened on a base designed for the spindle machine, the winding machine get on the base for the auxiliary motor and the motor get where the carding machine was supposed to go. Similar untrained management in planning the forests for recreational use will place a hotel on a site which is best suited to camping, a summer home on the logical place for a hospital, a school on a location which should be used for a store and allow a homesiter to monopolize the only spring within miles which should supply the home site last of all being more valuable for public use than for any other purpose.

So before we get into actual development in the forests there is need of a corps of trained men, as well organized as those planning for and directing other forest uses. This corps will make plans for proper development in this giant field of outdoor play. The U. S. Forest Service has not such a corps at the present time, although it has men trained in other lines handling their specialties. Some few states have landscape architects on recreational work as consultants and the National Park Service, although possessing one landscape architect on

its staff, must be far undermanned to handle the landscape problems which are certain to exist in the parks. This need of trained men must have recognition in all of the outdoor recreational fields if the best is to come out of our efforts. It is better to remain passive than to strike blindly into development without adequate planning and proper direction.

With plans established there arises the question of cost of machinery built and installed according to plans. But those plans must be made prior to building for if they are not there will soon develop the heterogeneous, unskillfully managed mixup which is illustrated in the example of the cotton mill. If good plans are not made for the recreation factory in the forests there will be a relatively greater loss of invested money than in the case of the cotton mill. When someone competent got on the job in the latter case the machines could be moved to their proper bases in short order. In improperly developed forest

plans the machines for recreation production are built to the ground and cannot be moved in many cases without complete wrecking. Then the ground where they were first and improperly built is often unfit for the use which it should have primarily been planned for.

But suppose that there is a time near when there is an adequate number of trained landscape men handling the recreational planning and development in our forested areas. This must come. Then plans will be made to fit the country and produce great and good recreational values. What is the cost of the machinery?

In the former article on minimum protective standards the camp fireplace was mentioned as the most potent factor in fire protection on a campground. It was justified on that one basis alone. But it affords recreational use which also would justify its construction if this were its only reason for being built.

The fireplace described has cost in the neighborhood of six dollars. It can now be built for less. The cost is low when production value is considered. The demand for these simple recreation producing machines was so great on one western campground that younger members of a family were often sent to camp Saturday night to sleep beside a fireplace so it would be reserved for the rest of the party the next day.

If it is worth six cents every time it is used a fireplace would need only one party using it once a day through one season to pay for its cost on the recreation production basis. However, it is probable that such a fireplace



A CLOSE-UP OF A CAMP SHELTER

The fireplace in front is equipped to serve as a cooking arrangement and as a place to build a fire to heat the lean-to. While such shelters are far too small and are not suited to this type of use they are better than none, often serving most satisfactorily as emergency shelters.



properly built will last for five or more years and it is known that some of these simple structures have served as many as five parties in one day, each consisting of from two to ten persons. One thing is certain, a fireplace of this sort in its normal life will produce values equal to four or five hundred per cent on the investment.

Another protective feature mentioned before is the sanitary. It is as essential to the production of recreation as the sides of the seats are to the auto. In the auto the turning of a curve in the road is dangerous without the protection of the seat sides. The use of any area in forest lands is dangerous without sanitation. A plant of any kind is not sanely developed nor sanely administered until it is made safe for human occupancy. No recreation ground is ready to produce recreation in a rational way until made safe with properly placed sanitariums.

Water development also came in for a discussion in the earlier article. It is a protective feature that must have consideration if our plant is to function efficiently. Water is an essential of human existence and if it is not present in a pure state and adequate quantities on a

creation. They must make it possible to utilize the recreational materials in forests without danger to the consumer. Without them production is dangerous and faulty.

With planning done and protective measures taken, there opens another part of the recreation field which is that devoted to nothing but the fundamental purpose of creating recreational values.

Of prime importance in this portion of our plant machinery are the recreational features along our roads and trails. It is safe to say that there are not a half dozen recreational roads in the country today although there are hundreds of millions spent on this part of the producing plant. The planning for recreation is faulty. Every road in the country is potential producing machinery if only a small sum were spent to put it into running condition.

To illustrate what is meant by installing the recreation producing details let us consider a typical forest highway. It has been built at a cost of several hundreds of thousands of dollars. Yet it does not provide more than a traffic line. It is not a recreation road. It stops short



CAMPING ON AN IMPROVED CAMP GROUNDS

It is this sort of a structure that many local people have raised funds to build in the Forests. It is the lean-to shelter shown on the preceding page with a fireplace built in front.

camping, hotel, cabin or other human occupancy place that portion of our recreation producing plant lacks one of the essentials for production.

These three features mentioned all are of the field of dual service. They are life protective necessities in our factory of outdoor play. They must be present before any other development takes place. However, they must be fitted to the landscape and their mere presence on a campground is no guarantee that that place is well arranged for recreational use. They must be properly built and properly placed. Besides protecting life they have a very important bearing on the production of re-

of the very production which it was designed to give.

The road swings along through timber, only a glimpse of mountain tops are visible. A canon is below and it is possible to hear the roar of the stream. The first recreation machinery on this road is adequate and properly planned vistas giving views of the mountain and canon.

The road reaches a grand outlook point but is narrow. There is no place to park, no invitation to linger there and make the most of the view. The second piece of recreation machinery is a broad stopping place at this point where several cars can be parked, perhaps a small





A CAMPGROUND SIGN

Signs are necessary to direct recreational use. Without them the average tourist is a stranger in a very unfamiliar location.

shelter with a travelers' register in it and if the view overlooks several mountain peaks a dial to point them out and name them should be in the shelter. The recreational return from the outlook is thus enhanced a thousand fold or more for everyone stopping. The road cost tens of thousands of dollars to reach this point. The outlook was one of the reasons for building the road. It was to produce inspiration, love of country, joy in living, reverence of God and many of the other intangible products of play in the open. But it fell short of the real production about ninety-five per cent because two or three per cent of the cost of the road to that point was not spent to actually take the final step in the installing of recreation producing machinery. This happened because proper landscape planning was lacking.

Every trail and road in the west, south, north and east presents the same problems. Millions are spent on construction of traffic lines which are often built in scenic locations solely for recreational use. But be-

cause there is no one who knows how to build this production phase into the mechanically engineered traffic line it is overlooked or bungled and the road which should produce recreational values on the hundred per cent basis is falling short of that ideal in an appalling manner.

Is it not folly to build roads designed to produce the recreational values, so called scenic roads, without making them function? They practically all need this "turning on of the power" as one might put it, and is it



THE COOKING FIREPLACE

This simple structure not only guards against fires spreading but it also produces recreational qualities. Its cost two years ago was around six dollars.

not folly to build more roads that are to be scenic highways without making our present roads recreation producing units? A tenth or even a twentieth of the cost of such a road would develop the recreation machinery to the full.

There are other pieces of recreation machinery which are needed on roads. Properly placed sanitariums are essential to comfort and health. Signs are needed. Little side trails to scenic points are a part of good road developments. Many a scenic gem is passed because there is not a parking

place near it and a short stub trail pointed out by a sign to invite the traveler to behold its offerings.

Beyond the development of the recreation machinery on existing roads there lies the whole field of road and trail development designed primarily to produce recreation. Most often roads built primarily for recreational purposes also serve commercial uses. There is a field for work in every scenic section of the country on new traffic lines designed primarily to produce the recreation commodity. There are few such highways. Many roads which were planned for this fall short of it because designed and built by someone more qualified to run a railroad grade than to determine what constitutes a recreational road.

In campground development there is need of shelters, community houses and other human use structures. Bulletin boards giving camp rules, distances to nearby camps, notices of the day and a map of the campground serve the public but are lacking on nearly every camping place. Short trails for foot travel, foot bridges over streams, camp tables, and many other things are in the catalog of machinery for recreation, but they are not now installed on the machinery bases of our producing plant.

The recreational use of forest lands is a fundamental one. It is not artificially created by propaganda nor transient conditions. People instinc-



A PICNIC-PARTY FIREPLACE

In the fireplace shown, a portion of the top is covered with a sheet metal cover. The remaining part is covered with bars. It will serve fifteen or twenty people.



tively turn to forested areas for play. It is inbred in humanity. It now produces in our National Forests values which are far beyond the cash return realized from other utilization of the lands. True, large monies do not go into the treasury of the United States but treasures more precious than money go into the souls, minds and bodies of citizens using forest areas for play. Recreation cannot be kept out of forest areas if it were desirable to do so. This is illustrated in the west, where it is necessary to place an armed guard on city watersheds to keep out recreational users. Even with this restriction present people come to play on the slopes of timbered mountains thus protected. It is impossible to keep them out. It is impossible because our desire for recreation in forest

on service to human forest uses. It should have development to produce the best as surely as timber activities are now receiving large funds to aid in lumber production. Recreation should have road funds and trail funds to develop the best values along existing traffic lines and to build new truly recreational roads. This is as just as allotting funds, as has been done, to furnish traffic lines in the mountains serving settlers, timber operators and stock men, for the roads built for this recreational use are universally used. Ten recreationists to one economic user is a low estimate of the division of forest road use.

But recreation is not receiving the necessary support in the vast majority of our forest areas. Few trained men are employed to plan and direct while other activ-



THE EVANS REST CABIN

This cabin, roomy enough to take care of quite a crowd, was built by the Colorado Mountain Club cooperating with the Forest Service. It is equipped to take care of a dozen people. Pots, pans, tools and table service are left here permanently with the cabin unlocked. All are welcome. All may use the cabin. So far no one has abused it. It is near timberline on Mount Evans and designed to serve those people who are climbing the peak. It is this class of development that is needed beyond simple protective needs to produce the most of the best recreation from our Forests.

areas is a part of us and being a part of us we must secure recreation in the out-of-doors for our own good and growth as surely as we must procure ourselves shelter and physical food.

If recreation is a fundamental use of forest lands and does so universally produce values of high worth it should have equal recognition with other forest products.

It should have a trained force planning and administering the use. It should have improvements serving the people who use the areas. If it is sound policy to build fences to serve the stock eating the forage on the range, and no one questions this, it is as logical to spend money

ities of forests are more adequately manned. Funds are supplied for recreational development to meet the minimum protective needs only in a few of the forest areas of the country and in the National Forests, because Congress had not specifically set aside funds for such use, they are almost completely lacking. The production of recreation, an essential of human existence, is provided for adequately only on a few forest lands. In the National Forests there is hardly a point where real production features have been made for the same reason that the forest campgrounds are allowed to remain dangerous—Congress has not provided for this great forest use



in our properties.

The minimum machinery for producing recreation commodities is not costly. The very hiring of trained landscape architects to plan for and direct this work will stop loss by preventing ill-advised construction. The big costs of putting our recreation factory on a producing basis have all been met. The walls, foundations—everything but the fabric producing machinery is present. Less than a tenth, probably not more than five per cent of the cost of developing these to the present point will be further needed to produce 100 per cent of recreational use. With a 95 per cent investment now made they produce from a few to eight or ten per cent of the possible total.

A tremendous initial investment is in a critical condition with regard to recreation production. No trained men are organized to direct the use of that investment—or if they are hired are hampered by lack of adequate funds to carry out their plans. A few hundred thousands of dollars will put many idle plants to producing recreation par-excellence. Some states have recognized this and have made modest appropriations for the business of making play. Literally millions of dollars worth of play can be produced by a comparatively small investment.

Play is an essential in human life. It is as fundamental

a need as beefsteaks, lumber, cotton cloth or any other commodity. Our greatest and best plants for the production of play are standing idle or running at low efficiency through lack of proper direction and development. It is high time that we all wake up to the fact that this condition exists and insist that our greatest play producers, the forest lands of the country, be made safe and capacity producing units.

Today we have the shells of our factories for producing the recreation commodity in National, State and County parks and forests. The bases are built for the producing units. Nothing is lacking but trained direction and machinery. The market is the entire population of the country—an eager group of customers. Today we are on the threshold of producing great quantities of a human need in these extensive unfitted plants. What will the tomorrow of forest recreation be?

God grant that our vision be clear enough to see the magnificent human service our recreation factories can give! And may He grant further that we make them temples where, while receiving the values found there, we may be assured the knowledge that we have not bungled nor shirked the trust He has placed in our hands when giving us the great forest play places of our Nation.



#### BIG DOUGLAS FIR TREES

This photograph gives evidence of the size of Douglas Fir trees which grow in some of the fine stands of timber owned by the St. Paul and Tacoma Lumber Company, in Washington. The butt cut on the first car came from a tree which the report says was 300 feet high and whose lowest limb was some 200 feet above the ground. This log was 32 feet long, 9 feet in diameter inside the bark at the butt, 7 feet at the top, and scaled 11,000 feet board measure. The entire tree scaled 43,000 feet. The second car in the picture contains the butt log from another good sized tree and the other cars carry the second and third cuts, respectively, from the larger tree. The photograph was taken in January, 1922, at the plant of the company in Tacoma just before the logs were dumped in the pond.



# TREES AND FLOWERS IN THE UNITED STATES BOTANIC GARDEN

By R. W. Shufeldt

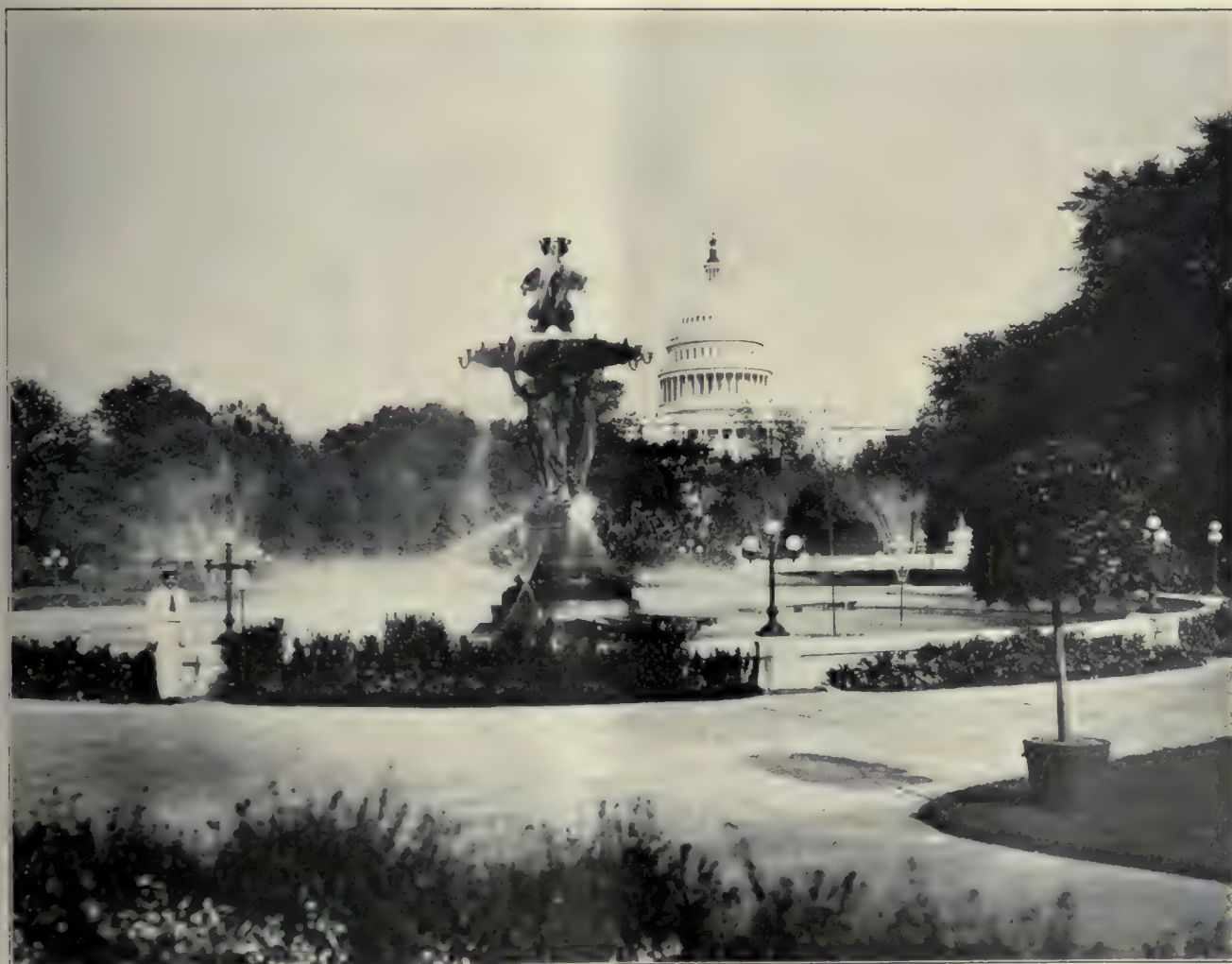
(Photographs by the official photographer and the author.)

ONE of the most interesting places to visit in Washington is the United States Botanic Garden, and to do this with profit, one should select a time when the majority of the trees and plants are at their best with respect to leafage and flowers. Early in May is a very good time; and one who has never seen this reservation, with its beautiful conservatories and spacious grounds, most assuredly has something well worth the while to look forward to and to enjoy. Foresters especially should be interested in making such a visit, as not only are there many American trees to examine and study, but a great many foreign ones as well, which are not likely to be seen anywhere else except in their native habitats. This applies, too, to a host of plants, cacti, flowers, and so on, in which many foresters are likewise interested and enjoy studying.

From various points of view, the grounds of the Bot-

anic Garden present a great many attractive vistas, and in Figure 1 we have an example of these, taken in mid-summer, when the famous Bartholdi Fountain was in full play. This fountain is by Augusti Bartholdi, the sculptor, and holds a position north of the main conservatory. At the close of the Philadelphia Centennial in 1878, Congress purchased this fountain, and it constitutes one of the attractions of the city's reservations. A published description of it says that "it has a marble basin ninety-three feet in diameter, surmounted with nine main jets, which have been recently wired for electricity. The fountain is supplied from the Aqueduct, and throws its highest stream to an altitude of sixty-five feet. Spaced in the basin are numerous fancy sprays. This fountain in full play presents a beautiful effect, especially when reflecting the rays of the sun."

Many Washingtonians and others have seen this Bar-



THE BARTHOLDI FOUNTAIN IN THE UNITED STATES BOTANIC GARDEN

Fig. 1.—During a severe winter some years ago the basin above the three female figures, lit by over a dozen electric lights, was magnificently hung with scores of icicles of all sizes. It is said that hundreds of cameras recorded the extraordinary sight.





CEDAR OF LEBANON

Fig. 2.—Unusually interesting trees in the grounds of the garden are the Cedar of Lebanon (center), and the low-growing European Hornbeam on the right, both trees which attract much attention.

tholdi Fountain in the winter time, when it has been draped with hundreds of icicles, many of them of great length, and all glistening with wonderful brilliancy upon a moonlit winter's night.

Note, too, in Figure 1 the fine view one gets of the dome of the Nation's Capitol, while the wealth of trees prevents one from seeing little else of the building. The fountain is surrounded by a bed containing many interesting plants, some of which are from foreign countries and the admiration of the visiting botanist.

Upon closer view, we have the south entrance of the main conservatory in Figure 4—a most imposing structure, and attention is invited to the two cypress cedars in this illustration. The one on the left was planted by Edwin Booth, the famous tragedian, and the other by Lawrence Barrett, equally well known in the theatrical profession. Many such historical trees are in the grounds, but space will not admit of either picturing or noticing them all here.

As we approach the south entrance we pass two very remarkable trees, rarely seen growing anywhere in the United States; they are well shown in Figure 2. The tree on the left is a fine specimen of the Cedar of Lebanon (*Cedrus libani*), while the other is a very grand one of the European Hornbeam (*Carpinus betulus*). Note its short trunk, and how soon it throws off from it its far-reaching limbs. When this tree is in full leafage in summer, it presents a most glorious spectacle with respect to form and foliage.

Near another path we come across two beautiful Papaw trees—a male and a female one, which are of exceptional interest, and known as *Carica papaya*; they are seen in Figure 5.

"The main conservatory," says a writer at hand, "commenced in 1867 from designs by Mr. Clark, Architect of the Capitol, consists of a central dome and two wings. The base is of marble and the superstructure iron. The entire length is three hundred feet, and wings twenty-five feet. The dome is supported on a brick column, which answers the double purpose of being a chimney also. Around this column winds an iron, spiral staircase, which leads to a cupola surrounded by a balustrade. From this point the finest view of the West Front of the Capitol may be obtained. There are ten smaller



PAPAW TREES IN FULL FRUIT

Fig. 3.—One can gain some idea of the size of the main conservatory in the garden upon seeing full-grown trees of this species in a flourishing condition within it.



conservatories devoted principally to the growing of plants for exhibition in the main conservatory."

In one or two of these smaller ones Supt. Hess allowed the author to photograph a number of the rich tropical plants that happened to be in bloom; more than this, Mr. Paget cut specimens of rare and rich orchids, of coffee-berries, and of other attractive plants for him. Among the flowering plants they photographed there was a particularly rare lady-slipper (*Cypripedium villosum*), reproduced in Figure 6, its exquisite shades of rich sap green, dark green, greenish yellow, and purple veinings lent to it a most striking appearance that caught the eye of the visitor at once upon entering the conservatory.

the faintest shade of green. The lower central petals are a rich magenta, darkest above where they are centrally striped with white. The phenomenon of unfolding or opening is seen half accomplished in the topmost flower of the stem; the single central petal remains in situ, its free margin simply crimping; and the pair of petals next to it twist completely around, so that their white side face outwards; they also crimp, as shown. The inferior pair crimp, too, but retain their position; the central purple petal curves downwards and becomes the lowermost one, and the white ovary—if it be the ovary—points directly backwards. As the flower matures, this grows to at least three times the size it has in the un-



MAIN ROTUNDA OF THE UNITED STATES BOTANIC GARDEN.

Fig. 4.—This is the south side of the building and the pathways leading to it. The cypress trees planted by Edwin Booth and Lawrence Barrett here relieve the severity of the structure behind them.

Several plants of the lovely Bornean orchid were in full flower, and a fine specimen was presented to me for the purpose of photography; it is here reproduced in Figure 7. The parts that show white in the illustration are white, while the main flower-stem and leaves are grass green—the former the lighter of the two. The stem of the plant itself is dark straw color. As to the flower, the speckles are a pale amber brown, the petals are emarginated with very pale magenta, and the buds are white, tinged with

opened bud. The flower-stem springs from the main plant-stem in the axil, several leaves (4-6) down the stalk. The leaves here shown did not belong to the particular bunch of flowers photographed, but were taken from another plant of the same species. Some of the orchids in this conservatory were especially fine and beautiful, particularly a large white one, with very delicate pink emarginations (Figure 8).

So spacious are the wings and dome of the main con-





#### SPECIMENS OF THE PAPAW

Fig. 5.—A male and a female tree. These fine trees are in full flower and perfect leafage. Papaws (*carica papaya*) are grown in the conservatory and in the grounds as well.

servatory building that they admit of tree-like plants flourishing there. A fine example of this is seen in Figure 3, where two fruiting specimens of *Carica papaya* are seen to be in admirable condition. This is the famous papaw tree, grown to become a very different tree as compared with the one here shown in Figure 4—an out-of-doors example of it. An authority at hand says that "the papaw is native in South America, but now widely diffused throughout the tropics. Its height is about twenty feet; its deeply seven-lobed leaves are two feet in diameter, and borne on foot-stalks two feet long. The fruit is ten inches long, commonly of an oblong form, ribbed, and having a thick, fleshy rind. It is sometimes eaten raw or made into a sauce, or when green is boiled as a vegetable and is also pickled. The trunk, leaves, and fruit contain an acrid, milky juice (*papain*), which has the property of making quickly tender meat, which is boiled with a little of it or wrapped in the leaves, or, as it is claimed, merely hung up among the leaves. The seeds are an efficacious vermifuge. The leaves are saponaceous." The papaw is also called, by some, the melon-tree.

When warm weather arrives, many potted plants may be taken out of the conservatory and placed out-of-doors, where they form very attractive subjects for study. In the case of some of the rarer plants of the torrid zone, this is a little hazardous, as these thrive only in high temperatures

Two very interesting plants are beautifully shown in Figure 9, namely the Chandelier plant (*Bryophyllum calcinum*) and the Mother-in-law plant (*Diffenbachia picta*). Note the fine ferns growing above these two plants—one could easily spend days in this great conservatory studying the plants of the tropics alone.

We read that "the first collection of plants in the United States Botanic Garden was brought to the United States by the Exploring Expedition to the Southern Hemisphere, 1838-42, commanded by Captain (rear Admiral) Charles Wilkes. The collection was first deposited in the Patent Office, but was removed in 1850 to the Botanic Garden. Some of the plants are still living, and a large share of the present collection are the descendants of those brought back by the Wilkes Expedition. A few have furnished representatives for many of the principal conservatories of the United States and Europe. The distribution of the collection is according to a geographical distribution. The strictly tropical plants occupy the central portion of the main conservatory; those of a semi-tropical nature, requiring protection and lying towards the North Pole, are placed in the West Wing, and all indigenous to countries lying towards the South Pole are in the East Wing.



#### A LOVELY SPECIMEN OF LADY SLIPPER

Fig. 6.—This species has been named *Cypripedium villosum* and is a rather near relative of our American lady-slipper, which is still quite abundant in some localities in the Atlantic States.



"The Central Building or Rotunda, temperature 80 degrees, contains a fine variety of the majestic palms, called Martins, the princes of vegetation, and of which there are three hundred kinds, the most prominent being here represented. The most interesting in the collection is the palm tree of Scripture, familiarly known as the date palm. Jericho, the City of Palms, was so called from the numbers of this tree growing in its vicinity. It was recommended by the Jews in the Feast of the Tabernacles. In Arabia, Egypt and Persia it supplies almost every want of the inhabitants.

"The fruit is used for food, the leaves for shelter, the wood for fuel, and the sap for spiritous liquor. It matures in ten years, and then fruits for centuries, bearing from one to three hundred cwt. at a time. Among the Arabs the pollen dust is preserved from year to year, and at the season of impregnation of the pistils or female flowers, a feast called "Marriage of the Palms" is held. It is a singular historical fact that the date palm of Egypt bore no fruit in the year 1800, owing to the presence of the French army in the country, which prevented the annual marriage feast.

"Among the other plants in this portion of the conserv-



FEW FLOWERS ATTRACT MORE ATTENTION THAN DO THE ORCHIDS

Fig. 8.—One of the several smaller conservatories in the Garden is given over almost entirely to the cultivation of these showy flowers, with their white and pink-edged petals.



A BORNEAN ORCHID OF GREAT BEAUTY

Fig. 7.—This remarkable East Indian species does wonderfully well as a conservatory plant, and in the greenhouses of the Garden few flowers can equal it for beauty.

atory are the fan, royal, rattan sago of Japan and China, panama hat, oil, wine, coco de Chili, sugar and cradle palms; the West Indian bamboo; the tree fern from New Zealand; Astra pea from Madagascar; screw pine of Australia, with its corkscrew leaves and root in mid-air; the cinnamon of Ceylon; maiden's hair fern; mango, a delicious fruit of the West Indies; banana; that most prolific of all plants; the great stag horn and silk horn ferns from Australia (very fine specimens); the dumb cane of South America, commonly known as the mother-in-law plant (*Diffenbachia picta*) (see Fig. 9.) The sap of the root of the latter will take away the power of speech. Humboldt, during his explorations in South America, was eight days speechless from tasting it. The outer circle of the Rotunda is devoted to the smaller tropical plants.

"The East range or Wing, temperature 50 degrees, is devoted more particularly to the plants of the South Sea Islands, Brazil, Cape of Good Hope, Australia and New Zealand. The principal specimens are the tree fern of New Zealand; the aloe and the Caffre bread tree from the Cape of Good Hope; the India rubber; the passion flower; the caladium of Brazil; Norfolk Island pine of Australia—one of the most beautiful and largest growing trees in the world; the queen plant or bird of



paradise flower, named from its resemblance to the plume of the bird; tuitui or candle-nut tree from the Society Islands, the nut being used by the natives for lighting their huts; the coffee plant, and several varieties of cacti.

"The West wing, temperature the same as the East wing, the plants of China, Japan, East and West Indies,

and Mexico, are assigned. The most notable plants here are the *Cycadeceae* of the East Indies (the largest in the country); the four-century plant; the *Camellia japonica* or Japan Rose; the lovely lily of Cuba; the historic *Papyrus antiquorum* or paper plant of Egypt; the tall and leeches trees of China; the guava, a delightful fruit of the West Indies; the vanilla of Mexico—the species which furnishes the aromatic bean; the black pepper from the East Indies; the sugar cane, the Cherimoyer or custard-apple; the cassia of the West Indies; the sensitive and humble plants; the American aloe or century plant of Mexico; the camphor trees

from Japan; the tea plant; the papaya or oriental tree which has the property of rendering the toughest meat tender; a plant of *Adansonia digitata* or monkey bread, which grows on the banks of the Senegal and reaches a circumference of one hundred feet. They

are supposed to attain the age of three thousand years, and have many uses. Humboldt pronounces them the oldest organic monuments of our planet.

"There is also a specimen of the Carob tree of Palestine, sometimes called St. John's bread. The pulp around the seed is supposed to have been the wild honey upon

which St. John fed in the wilderness. \* \* \*

There are two smaller conservatories devoted entirely to cacti and orchids. The botanical collection received some valuable contributions from the expedition of Commodore Perry to Japan. The supply is kept up by propagation, and at rare intervals by scientific or exploring expeditions of the United States."

No apology is necessary for the somewhat lengthy quotation just given, as nothing could have been gained by simply paraphrasing it. As it stands, it furnishes the very sort of information that students of trees and flowers really require. So little is known, in this country and abroad,



CHANDELIER AND MOTHER-IN-LAW PLANTS IN FULL BLOOM

Fig. 9.—These are very handsome specimens; and, as one passes into the interior beyond them, where hundreds of plants thrive in a temperature of 80 degrees F., it is not difficult to imagine that one is in a tropical jungle.

about our great United States Botanic Garden—especially as to what plants and trees may be seen and studied there—that I feel that the above list of them will be fully appreciated by all who are interested in foreign and native trees and plants. A plan is now on foot to



greatly increase the area occupied by the present Botanic Garden; it appears now to be a settled fact that a tract of very considerable extent adjoining the present grounds on the south, and, topographically, quite ideal for the purpose, will be acquired through an act of Congress, if, indeed, this has not already been done. It is said that the addition in question can be rendered quite picturesque through various improvements which Mr. Hess has already sketched out.

All this is of extreme importance; for, once properly established and developed, the Garden would become one of the great educational centers of the world, and several millions of people would annually visit it, as they now do in the case of extensive zoological gardens and great aquaria, such as the one in New York City.

There is no question as to the enormous value of a botanic garden as an educational enterprise. This goes without the saying. As a matter of fact, our United States Botanic Garden should receive from the Government at least double what it annually gets for its proper support and development.

*"Make me a home in the forest,  
Where its shadows linger deep—  
Where truth shall know my spirit,  
And the pines their vigil keep."  
—HARRY T. FEE.*

## HER TREE

She sowed a seed of Sorrow in the earth,  
And oh, she watered it with bitter tears!  
And then she turned her to her daily tasks  
And set her face toward the coming years!

She could not stop to nurture it, nor tend,  
Nor even watch its growth, unless she drew  
Her time and strength away from all the cares  
That each day brought—yet strong and straight  
it grew!

Frost did not kill nor hot suns wither it,  
And it became, as years went by, a tree!  
And passers-by would gather at her door,  
For oh, its blossoms, they were fair to see!

And they would rest a while beneath its shade,  
And rise, refreshed at last—rejoiced that they  
Who journeyed wearily along the road  
Had found the tree she planted by the way!

And oft she heard them murmur, as they went,  
A blessing on the planter of the tree!  
But oh, they called it by another name—  
They said it was the tree of Sympathy!

Roselle Mercier Montgomery.

*Reprinted by courtesy of the N. Y. Times*



## THE GHOST FOREST

By Yvonne Jarrett

Fire-ravished trees stand stark and white  
Beneath a sombre sky,  
And charred and blackened branches  
Like a stricken army lie.

No sound of living thing disturbs  
The silence, night or noon;  
No bird is brave enough to sing  
Its song o'er such a tomb.

But in the wind you sometimes hear  
A whisper, soft, a sigh,  
As though the spirits of the trees  
Were keeping watch nearby.

Until the rising sun breaks through  
And folds each ghostly form  
In a robe of silver radiance  
To greet the coming morn.

—Portland Oregonian.

**T**O remove weed trees from the woodlot is as important as it is to weed the garden; besides you can burn the wood provided by crooked, defective trees, and from those that are not good timber species.

**A**S great oaks from little acorns, so a chip on the shoulder may become a stumbling block to progress.  
—Uinta Digest.



# DO NOT LET THE CURBSETTER RUIN YOUR TREES

By Samuel Newman Baxter

ARBORICULTURIST, FAIRMOUNT PARK COMMISSION, PHILADELPHIA

**A**N observer of tree life in cities would have no difficulty writing a book on the vicissitudes of street trees, so ample is the material on this subject and so manifold are the adversities, both preventable and unpreventable, to which trees are exposed when introduced by man to city life. Nature would never select a city sidewalk on which to rear her brood of trees, yet



## PRACTICALLY RUINED BY CURB SETTING

This beautiful Silver Maple was ruthlessly cut at the base by the curbsetter, who "had no idea that it would hurt the tree."

man, in quest of the shade, health and beauty which they impart, invariably expects nature to care for her own under these artificial conditions and fails to give a helping hand by imitating nature and providing natural conditions so far as is possible.

In this article we shall not attempt to cover all the vicissitudes but confine it to a chapter on desecrations by the curbsetter, illustrating how to spare trees from the ruthless work of this individual.

Not long ago a property owner appealed for help to the men who were resetting curbing nearby, and toward his direction, from cutting the roots of street trees. An inspector was assigned posthaste to

see the offender and have him respect the ordinance for the protection of street trees. When reprimanded for cutting the tree roots—they happened to be sugar maples, a tree which resents abuse more than most trees—the curbsetter expressed surprise that he had injured the trees. "Why," said he, "I cut more than that from trees up on ——— Street three years ago to set the curb and the tree is still alive." Yes, the tree he had cut was still alive, being a rapid growing silver maple it tried hard to survive the shock, but in submitting this photograph we leave to the reader how long it will live, or rather, how long it should be allowed to remain in its dangerous position.

Can you imagine greater stupidity than was shown by this curbsetter when he deliberately cut into one-third



## HERE, AGAIN, THE TREE WAS CUT AT THE BASE

To maintain the straight line of the curb, quite a cut was made on this old Sugar Maple, a species peculiarly sensitive to injury.

the trunk of this large silver maple that the curb might be laid? Aside from its effect upon the health of the tree, the undermining has caused it to lean over the highway at a dangerous angle, a constant menace to passing vehicles and likely to be blown over in a high



wind with the possibility of maiming or killing someone. Needless to say, Mr. Curbsetter learned his lesson and while his theory that a root may be cut and the tree yet live is not infrequently borne out in practice, the same holds good in the amputation of a human limb. We prefer to retain all our members for life's battles, however, and so do trees.

Sugar maples when grown on sidewalks do not ordinarily reach the proportion of nine feet in circumference so when this old specimen was encountered in extending the street, the builder showed good judgment in retaining it despite the snug fit for the narrow planting strip.

The curbsetter insisted on plying his art and rather than omit the curb where the tree projected a few inches, off came a sliver from the base of the tree! True, he did make a neat, clean cut and even painted it, but longitudinal cuts of this sort do not heal over like those made crosswise, and so this monarch of an erstwhile forest must pass the rest of its days with its "heel" chopped off and give thanks from its leafy branches which tower high above the house top that man spared it.

Having observed these two cases—and they may be typical with every community—how not to do it, let us note the application of measures to preserve street trees under similar circumstances.

A European horse-chestnut ten feet in circumference spared by a "break" in the curbing.

This is the simplest form of treating a tree in the line of a curb—a break in the curb—and one which should suggest itself to any curbsetter with common sense. Vehicles may scar the trunk but surely drivers will concede its right to the slight encroachment on the roadway, especially if they could see it in early May when thousands of white blossoms bedeck it and in their rigid

upright forms cause the tree to resemble a huge candelabrum. This tree also serves as a hitching post, judging from the chain on the side, though this practice is not to be recommended. How much better for the trees, and mankind, too, had the curbsetter adopted this treatment for the silver and sugar maples mentioned in the foregoing photographs!

The roots of this old Norway maple had forced the stone curbing out of alignment and so when a change of the grade in the street at this point necessitated the construction of a new roadbed and sidewalk, the roots were found to extend along the line of the proposed new

curb. To divert the curbing would have been a simple matter but the foundation for the same would have jeopardized the roots. The engineers preferred to retain the straight line for the face of the curb and so a reinforced concrete arched curb was constructed to bridge the base of the tree and projecting roots. On either side of the arch it was necessary to build an extension or shoulder as shown in photograph to support the curb, along and under which the root ex-



AN UNUSUAL AND EFFECTIVE CURB TREATMENT

This curbing was raised into an arch to protect the roots of a beautiful Norway Maple before the road bed was laid.

tends for several feet. The top of the shoulder is flush with and forms a part of the brick gutters which have since been laid, and water in the gutter may seep under the arch to the roots. Thus we have curbing and the roots, too! Note the wadding of newspapers to keep the concrete off the tree and provide growing space between the tree trunk and the concrete arch.

Here is another method of saving trees when in the line of newly opened streets, raising the grade to conform with old conditions and diverting curb and sidewalk that the root system may be preserved. Incidentally, this happens to be an uncommon though not a rare tree—*Sophora Japonica*, or Japanese Pagoda





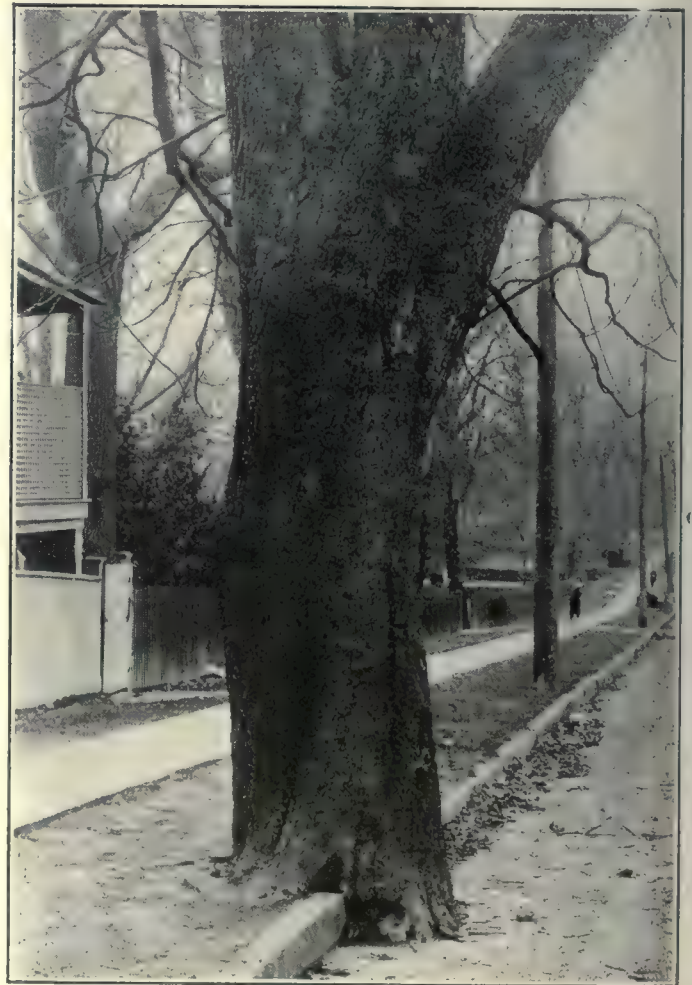
#### SAVED BY UNIQUE TREATMENT OF CURBING

This beautiful Japonica was left in its original position, the curbing being diverted to meet its requirements.

tree. Furthermore, it is the largest around Philadelphia and possibly in this country. The trunk measures three feet in diameter and the branches spread over an area of seventy feet. It may have been planted by the late Robert Buist, whose nurseries were not far from the home of John Bartram, who found and introduced that rare and beautiful flowering tree, *Gordonia pubescens*, or Franklin tree. The writer discovered this large *Sophora* when the street of which it is now a part was about to be opened, and recommended its preservation. The many stubs shown throughout the tree are evidence of its previous neglect, but since the photograph was taken these have been removed in a thorough pruning and the tree is likely to live for many years, affording a grateful shade for the occupants of these

homes which have sprung up about it. The bloom, too, will delight for it comes in large panicles, white, peashaped, and in midsummer when trees in flower are scarce.

These are but a few instances of the measures taken to protect street trees in Philadelphia since the Fairmount Park Commission assumed their control in 1912 by virtue of an Act of Assembly. In that year a systematic street tree census was taken, plotting and recording 127,300 trees, with information which has since been of infinite value in executing the trust of a tree loving city. Trees mean much toward a "City Beautiful," and with their worth recognized no city or town should be without its Shade Tree Commission or Tree Warden.



#### CURBING OMITTED—THIS IS OFTEN DONE

This old horse chestnut stood directly in the way of the curb, so the curb was omitted, in deference to its age and dignity!



# Novel Trees And Forest Products

By S. J. Record

Professor of Forest Products, Yale University

## MAKING CLOTHING OUT OF WOOD

Clothing is ordinarily made out of wool, cotton, silk or linen. These are fibrous materials which are easily spun or twisted together into thread or yarn for weaving into cloth. Sometimes, as during a great war, not enough of these fibers can be had to supply the demand and other materials must be found to take their place.

This was the case with Germany and Austria during the war and they were forced to use the fibrous portions of nettles, rushes, broom and turf. They also made a great deal of cloth, clothing, bagging, canvass, cordage, etc., out of wood.

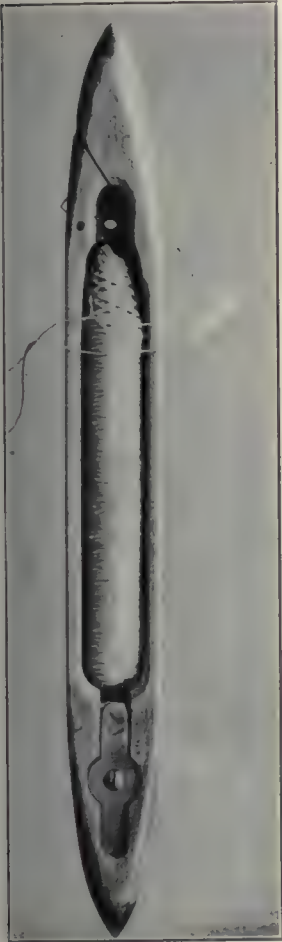
Wood is made up of tiny little hard fibers all tightly cemented together. By cutting the wood into little chips and then cooking these chips in certain acids or alkalis it is possible to dissolve out the hard material and to separate all the fibers. Through this process a stick of wood becomes a mass of soft pulp. Wood fibers are like cotton fibers only very, very much shorter. In fact it would take about eight spruce wood fibers placed end to end to measure an inch and each is so tiny as scarcely to be visible without a magnifier.

It would be very difficult to spin such short fibers into a thread so they are first made into paper. Look closely at a torn edge of a piece of paper and you will see that it is composed of tiny fibers in a closely tangled web. Now if you will take some thin brown wrapping paper, cut off a strip about half an inch wide and twist this tightly you will have a length of paper twine. If you use tissue paper you can make very fine thread and two or three of these may be twisted together into a stronger one.

Here, then, is the whole story of making wood into clothing. Chips are cooked to a fibrous pulp, this pulp

is spread out and the tangled fibers ironed down into sheets of paper, the paper is cut into narrow strips, the strips are spun or twisted by machines into thread or yarn, the thread or yarn is wound on spools and bobbins, these are put into looms and cloth is woven in the same way as ordinary cloth from cotton or wool.

The objections to cloth made in this way are that it is coarse and harsh and becomes tender and easily torn when wet. The goods can be made softer and stronger by using part cotton, and by waterproofing the paper and twisting it very tightly it will withstand considerable wetting. The Germans and Austrians found paper textiles very serviceable not only for garments but also for table cloths and napkins, wall covering, curtains, bed covers and sheets, mattress ticking, bagging, harness straps and a whole host of military uses. No one, however, wants to wear paper clothing if he can get anything better.



Photograph by S. J. Record  
PAPER YARN SHUTTLE

A shuttle with its charge of paper yarn ready for the loom. One end of the yarn is untwisted to show the structure of it.



Photograph by S. J. Record

## PAPER TEXTILES

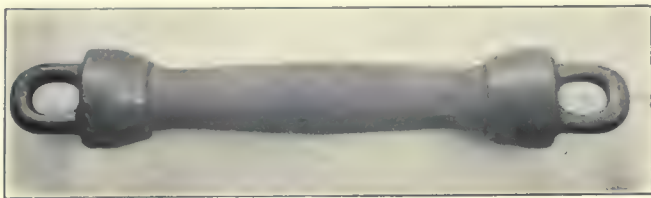
These print cloths are made of paper yarn and are used for clothing, tablecloths, etc. The background is a paper towel.



There is another way of making wood into wearing apparel. After it is reduced to pulp, as for making paper, the fibers are dissolved by chemicals and the solution squirted out through extremely minute holes and hardened into delicate threads something like the strands of a spider web. This is artificial silk which has become the great rival of the natural product of the silkworm.

#### WOOD STRAINS

The name "wood strains" is applied to the wooden insulators used in overhead electric line construction. They consist of turned pieces of hard wood enlarged in the middle and at the ends. They vary in length from eight inches to three feet and are from an inch to four inches in diameter at the smallest part. Malleable iron lugs with eyes for fastening to the guy wires are swedged onto the enlarged ends so that the wood is subjected to an endwise pull.



Photograph by S. J. Record

#### A WOOD STRAIN

There is no danger of the wood being pulled in two, the lugs at the end would slip off first.

Wood is used because in a dry condition it is a very poor conductor of electricity. Maple is the principle species employed for this purpose but many hard, strong, easily turned woods will do. The dry pieces are thoroughly impregnated with parafine and then coated with a heavy oil paint. The latter wears off in time but the parafine alone affords fairly good protection.

There is no danger of the wood being pulled in two because wood is so much stronger in tension than in resistance to shear. If a wood strain fails it is from some other cause, more likely the pulling off of the lugs. Poreclain and other kinds of insulators are being substituted on electric railroads but the trolley lines still use large numbers of the wooden kinds.

#### PLUGGING HOLES IN CROSSTIES

Whenever a spike is pulled out of a crosstie the hole that is left affords excellent opportunity for the entrance of water carrying spores and disease germs to the interior. To overcome this the holes are now commonly filled with wooden plugs. These are used by the million and are for the most part sawed by special machines from slabs and scraps from the mills and shops. Some railroads make some of their own plugs in the shops or employ the spare time of the section men in splitting them out of old ties. The common size is about four-and-a-half inches long, five-eighths of an inch square in cross section and with one end wedge-shaped like a spike. For untreated ties white oak or other durable wood is preferred for plugs. Any wood can be used where the ties are treated since the plugs are placed in gunny sacks and impregnated with the preservative along with the ties.

#### PINE STRAW ROADS

In certain parts of Florida, particularly in the lime-sink and lake regions, the sand is very deep and there is no clay available to make the roads firm. In the open pine woods, however, are large quantities of the long needles or pine-straw which makes a very satisfactory road material upon which autos can travel without difficulty. There are hundreds of miles of such roads in the state.



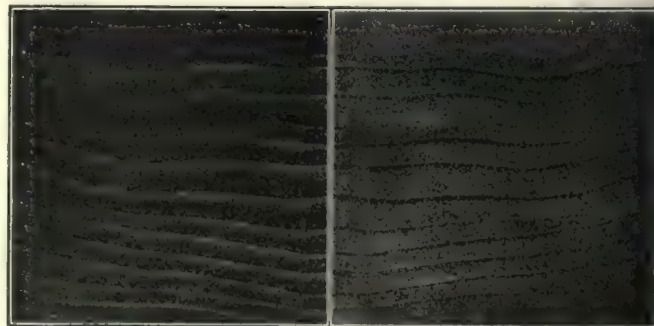
#### A TYPICAL ROAD

Pine straw road used mostly by automobiles going up Iron Mountain, near Lake Wailes, Polk County, Florida.

The straw is raked up in the woods and hauled to the road where it is spread to a depth of about a foot, though it soon gets flattened down. The work is usually done in early spring and costs from 40 to 60 dollars a mile. One strawing will usually last for a season and sometimes two. Unlike ordinary road materials this is in constant danger from fire so the expression "burning up the road" has a literal meaning in Florida.

#### MAKING PAPER NEGATIVES AND PRINTS FROM WOOD SECTIONS

It is often desirable to have prints showing in natural size the structure of woods. If well made they show the size, number, and arrangement of pores and other characteristics and for many purposes of comparison and study they serve nearly as well as the wood itself. The use of a camera for such purposes is not only expensive



Photograph by S. J. Record

#### AMERICAN ELM WOOD

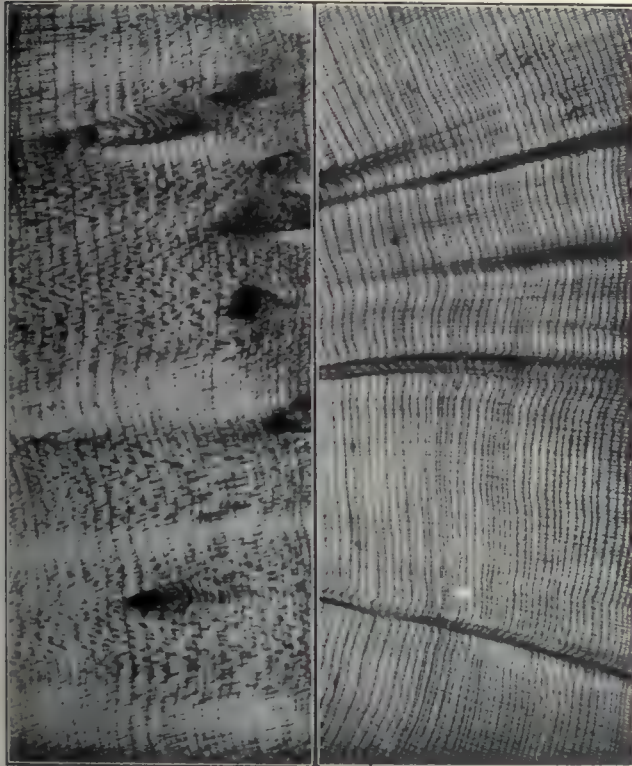
Positive print.

Paper negative.



but requires considerable skill in order to bring out details. In fine-textured woods such a photograph would ordinarily show no pores at all.

A very simple and inexpensive method is to take a very thin slice of wood and make a paper negative from it. This is done by placing the section in an ordinary printing frame, inserting a piece of photographic paper and proceeding in the ordinary manner of printing from negatives. A little practice will be required to get the correct density but with the gas-light papers the process is quite rapid.



Photograph by S. J. Record

#### INTERESTING WOOD SECTIONS

Quarter sawed bird's-eye maple showing irregularities in grain and characteristic appearance of rays.

A cross section of the wood of the sugar maple showing the appearance of bird's-eye on this surface.

The resulting print, however, is a negative in which the pores show as black spots and the dense fibers as white areas. To get a positive it is only necessary to render the opaque paper negative translucent so as to allow printing. This is accomplished by soaking the dry paper in kerosene for a few minutes, removing all surplus oil with a cloth or blotting paper. It is then ready to be placed in the printing frame, picture side up, and printed from as in the case of an ordinary film or glass negative. The resulting print shows the wood structure better than an ordinary photograph and the negatives are not only cheaper but are very convenient to handle and store.

If a section shows a difference in color the darker

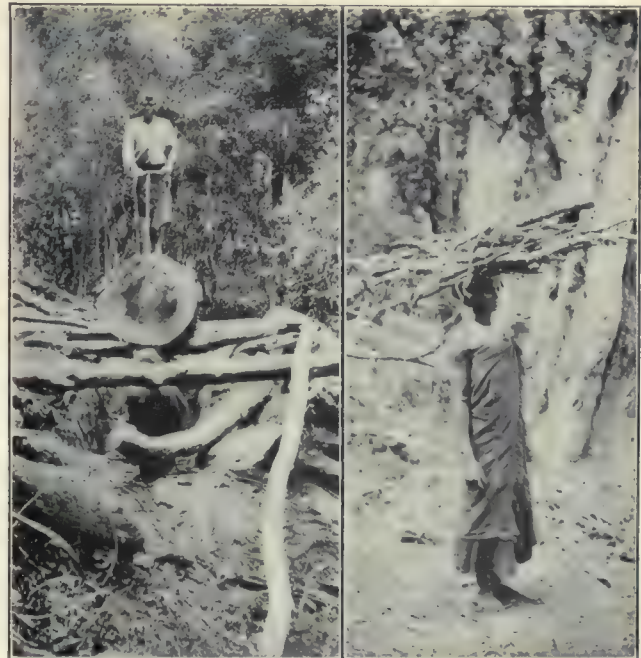
portion will print more slowly. This can be overcome by shading the light part enough to even it up. If printing by artificial light is found too slow, exposure to somewhat subdued daylight will give quick results. The sections used by the writer were taken from Romeyn B. Hough's "American Woods."

#### SOUTH AFRICAN FORESTS

THE forests in South Africa are of very limited extent, but the timbers exhibit a wide range in the quality of their wood, varying from extremely light and soft to equally extreme hardness and difficulty of working. Most of the trees are small but the yellow wood (*Podocarpus*) attains a diameter of 8 or 10 feet.

The large trees are manufactured into lumber by the pit-sawing process. A pit is dug for each tree and is about 7 feet deep, 3 feet wide and 20 feet long. The logs are rolled onto skids across the pit and usually sawn into three-inch planks. One sawyer stands on the top of the log and the other below in the pit. The planks are then hauled to the market by oxen. Small logs are usually sawn at sawmills but the planks go direct to the consumer who has to re-saw them as he sees fit.

Local woods are for the most part in disrepute by the manufacturers in that country due to the difficulty in seasoning them properly. The dry climate causes very rapid surface evaporation which results in serious checking and warping. Efforts are now being made to overcome this difficulty through the introduction of modern dry kilns of American type.



Photographs by Nils Eckbo

#### SOUTH AFRICAN PRODUCTS

Pitsawing a yellow-wood log African maid gathering fire-wood that measured 125 cubic feet. wood from the plentiful forest.



# TRANSPLANTING

Furman Lloyd Mulford

AS the frost gets out of the ground impatience to begin digging takes possession of the soul. Although it is a most appropriate time to be planning how and where the transplanting is to be done it is a time to leave the soil alone until such time as it is sufficiently dry to handle without danger of puddling. As light sandy soils are never troubled in this way the caution suggested above does not hold for them.

The condition of the soil is of prime importance in considering the mechanical operation of moving a growing plant from one location and re-establishing it in another under such conditions that it may reasonably be expected to continue its growth. One of the chief reasons why the transplanting of deciduous trees and shrubs is done spring and fall and not all through the winter is primarily that it is too much trouble to have the ground in suitable condition in the intervening months. It is just as possible to transplant a tree in January, in New York or New England, in a manner so that it will live, as it is to do it in October or April, but it takes more fore-thought, trouble and expense.

To be suitable for transplanting a soil should be sufficiently dry so that when squeezed tightly in the hand and then released it gradually springs apart. The reason for this is that if the soil is too wet and it is packed about the roots of the plant it puddles. That is it packs together in an impervious mass that will permit neither water nor air to reach the roots nor permit the roots to continue their growth. The action on the soil about the roots is similar to that on wet clay when it is pounded into place on the face of a dam. It is a common practice to wet the soil containing a large proportion of clay and pound it on surfaces intended to hold water and thus make the soil impervious. If the soil packed about the roots of plants is too wet it acts in the same manner, as though tamped on the surface of a dam. How soon after a rain or after the ground thaws in the spring it will be suitable for handling, depends on the particular soil as the rapidity with which soils dry depends on the relative amounts of clay and sand they contain combined with the amount of organic matter and the freedom with which the subsoil permits excess of water to escape. Some sandy soils never get too wet to handle



IN TRANSPLANTING STREET TREES CAREFUL PLACEMENT AND FILLING OF THE HOLE IS NECESSARY

The planter and two diggers are setting the tree while the wagon of trees waits to go to the next hole. The planter shakes the tree up and down occasionally, also works soil among the roots with his fingers. When the hole is partially filled he begins to tamp the soil.



while some clay soils seem never to be dry enough without getting too dry. This latter condition affects the plant less than it does the planter as it makes more difficult getting the soil sufficiently fine to pack about the roots. A lumpy soil can be made fine by extra trouble while a wet soil cannot be modified to suit.

Next in importance to having soil in proper condition is to have plants that have been properly dug and handled. Transplanting means re-establishing a plant in



EFFICIENT HANDLING

Trees taken from the ground and immediately packed in moss on the wagon, then packed for shipment in a shady place as soon as taken from the wagon, arrive at destination in good condition. These trees were planted directly from the wagon.

a new location with sufficient roots in good condition to feed the part that is above ground. In order to do this well the whole of the root system should be dug with the plant and then be so handled that none of the roots become so dry before they are replanted that they become useless as collectors and transmitters of food. The ideal method of transplanting is the moving of plants from pots in to the open ground. In this case the whole of the root system is present and none of it is lost in the moving so that the roots are immediately ready to extend into the new soil. The nearest approach to this is where a small plant may be dug with the soil about the roots and be carried on the shovel that dug it to the new location and be put into the hole already prepared for it without appreciably loosening the soil from the roots. Only a small proportion of the plants moved, however, can possibly be done by either of these ideal methods, so for others the best possible substitute must be used. In the case of deciduous plants this is the digging of them in such a manner that all of the root system is obtained. This does not mean digging so that all the roots are hanging fast to the plant but with many of them broken so that they are hanging limp and others all bruised and barked along the sides. Any root broken or bruised in this manner is practically useless for the support of the plant and might as well have been left in the ground

from which it was dug as far as any future good it can do is concerned.

Roots broken off or damaged in the digging will require the removal of a corresponding amount of the top in order to keep a reasonable balance between the amount of top growth and the roots available to supply moisture and mineral foods for its support. Because of the necessary loosening of the earth about the roots, because of the physical impossibility of getting them again into as close contact with the soil as they were before, and because of the destruction of the finest rootlets and root hairs that are the collecting contacts with the soil the ability of the roots to supply food is much reduced the first year. To offset this, from one fourth to one half of the top of these plants should be pruned away in order thus not to impose too much of a tax on the roots while the plant is becoming re-established.

Because the necessary cutting of the top is so much, if too many of the roots are destroyed in transplanting, it has become customary to grow plants in nurseries where they may be frequently dug and replanted or in lieu of this may have their roots severely pruned so that the plant will form a compact root system that may be dug with the least possible injury when the plant is sold. Many plants growing in the wild where the roots are not disturbed send out but few roots and these grow to long distances in gathering food. When such plants are dug it is often impossible to follow these long roots because of their intermingling with roots of other plants



INEFFICIENT HANDLING

Trees handled in this manner without packing or covering for the roots are reduced in vitality even when they are not killed. This sort of treatment at the nursery or at the purchaser's should not be tolerated.

so they are cut off in digging. Even if it is possible to follow such roots it is seldom done because of the work involved. It is this difference in the character of the root system that makes the nursery grown plants so much more valuable than plants collected in the woods.

After digging the roots need to be protected so that they will not dry out, for with most plants a drying of the outer covering or bark of the root, if it might be so called, practically kills it. At this point there is probably



more carelessness than at any other in the handling of plants unless it is between unpacking and replanting. There is a difference in plants as to the amount of such abuse they will stand and still survive and yet even those that will stand the most are injured by carelessness even when they are not killed. Among the trees that will not stand such abuse are the oaks and yet one city that plants many of these trees and is extremely careful in this matter succeeds in getting more than 98 percent of the oaks they plant on the street, to grow, and they are in the way of using large trees, which as a rule are more difficult to move than smaller ones. Their success is undoubtedly due to this great care. They dig a tree and at once "heel it in" that is cover the roots with soil in a temporary location. When ready to plant they pack the trees in the wagon with the roots thoroughly covered with wet moss. When they get to the place where the tree is to be set it is not taken from the wagon until the hole is ready and the men who are to plant it are standing beside it with their shovels ready for business. The tree is then set and the wagon moves on to the next hole, but the next tree is not taken from its covering of moss in the wagon until the planters at this hole are ready to actually put the trees in its final position. This method is in great contrast to that shown in the picture, where a load of trees is being hauled without even a covering of canvas to protect it from the sun and wind to say nothing of the lack of moss about the roots.

In addition to the injury of the roots already mentioned, they are sometimes hurt by being frozen in transit. When received frozen the plants should be placed if possible in a cellar where the temperature is only slightly above freezing and there be permitted to thaw as gradually as possible. While frozen they should be handled as little as possible. If in boxes or bales these should be handled carefully and the plants should not be unpacked until they are thawed. If they have been shipped in bulk in a car the situation

is more difficult but probably the only thing to do after noting their bad condition on the receipt to the railroad company is to handle them as little and as gently as possible in getting them to a proper place to thaw.

Although proper care may be taken at the nursery both in immediate covering of the roots after digging and in careful packing with plenty of moss or other packing material yet on arrival at destination the plants may be quickly ruined by bad treatment. They should be immediately unpacked. If the places are ready for planting this may be done as the plants are taken from

the box provided each one may be set as soon as it is taken from the packing material. As a rule a certain amount of sorting and selection has to be done before planting can begin, and also it is easier to check up all the material if it all is taken from the box at one time. Usually the best way is to unpack the plants and heel them in as they are unpacked. By "heeling in" is meant covering the roots with soil so that they are thoroughly protected from drying until ready to plant permanently. In this operation the roots of several plants may lie overlapping one another so long as all are brought sufficiently close to the soil to prevent any chance of their drying out. With smaller plants a trench is often dug and then the tops are laid nearly flat on the ground with the roots in the trench and then dirt is thrown over the roots. When done on a large scale the dirt used for covering the roots in the first trench is taken from the second trench and the tops of the plants in the second trench lie over the first trench. With large plants the simplest way is often to stand them up and



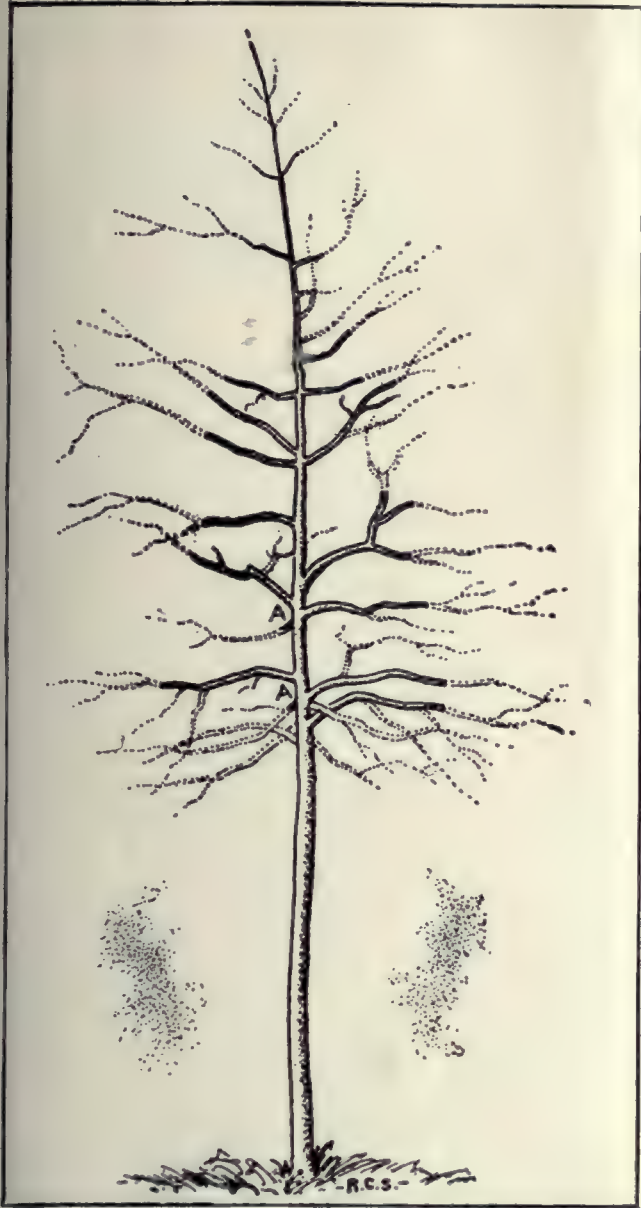
TREES WELL HEELED IN

Trees should always have their roots covered to prevent undue drying before planting. The covering of roots temporarily is called "heeling in." Large deciduous trees and evergreens are most readily "heeled in" standing as in this picture. Smaller deciduous plants are laid at an angle of 30 degrees or less with the ground; the earth for covering one lot of roots is taken from the trench for the next.

throw the dirt in around them much as though they were being planted.

For successful planting it is usually well to prepare the ground in advance. If the soil is shallow it will be necessary to remove the top soil and save it to one side then remove the sub-soil preferably to a depth of at least 18 inches and for large plants two feet, then se-





A PIN OAK TRIMMED FOR PLANTING

If the roots had been badly mutilated more severe pruning would have been desirable. Oaks require more pruning at transplanting than most trees. The stubs at A and A are bad. These should be cut off close to the trunk.

cure other top soil to replace the sub-soil removed. With this it is well to incorporate well rotted manure unless the soil is unusually rich and it is also desirable to add ground bone, cotton-seed meal or other fertilizers of that sort that will act more slowly than the manure. These should all be thoroughly mixed with the soil before planting is begun.

When the hole is ready the plant should be brought from where it has been "heeled in" and any bruised or mutilated roots should be cut off with a sharp knife making a smooth cut. This cut is usually made with the face downward although this is not necessary, the important thing being to have a smooth surface as this frequently seems to aid the starting of new roots that are necessary for the re-establishment of the plant. The top should also be pruned so that at least one fourth of the

prospective top for next year shall be removed if there have been no roots destroyed in digging the plant; to three-fourths or more of the prospective top in the case of badly mutilated roots or of plants collected from the woods, or if the plants are oaks or other kinds that are difficult to transplant.

After the pruning is done the plant should be placed in the hole and the roots spread out in all directions in a natural position. The hole should be large enough not to require the bending back or sidewise any of them. When the plant is placed some fine soil should be put in the hole and worked in about the smaller roots carefully. There is no implement that will take the place of the hand for this purpose. After the roots are well covered in this way the earth about them should be well firmed. There is nothing better for this than tramping with the feet, if it is carefully done, so as not to bark the roots or stems. If the soil is in good condition and the plant is entirely dormant the hole may now be entirely filled



A SYCAMORE PRUNED FOR PLANTING

Note that the general shape of the tree has been maintained and that a large part of the trimming has been done by removing whole limbs.





PLACING THE TREE IN ITS HOLE FOR PLANTING

A street tree is being placed ready for planting. This has just been taken from its packing of wet straw and moss on the wagon, and the man is measuring to get it at the proper distance from the curb. The shoveler is waiting to put in the dirt.

with soil and the plant be left to grow. If the soil is too dry, or the plant has partially started into growth, water should be applied immediately after the tramping and after it has soaked away the balance of the soil could be replaced without farther tramping. If the planting is done in the fall it is well to mound the soil up a little about the plant to be sure that settling does not permit water to collect and cause trouble from ice during the winter. The plants should be set about an inch lower than they were growing in the nursery. It is usually best to stake trees the first year to prevent wind from loosening them in the soil before they become established.

The question of the best season for transplanting often presents itself. In the eastern third of the country the season at hand is usually the best for such work. Most trees and shrubs will begin to form roots as soon as planted and if set in the fall will make more of a growth the following season than if planted in the spring. In the colder and drier regions farther west spring transplanting is probably better as owing to the extreme drying of the strong winds, plants set in the fall will be dried dead before spring because the roots not being established in the soil are unable to supply the moisture taken from the top by the wind. Even in this region transplanting may be successfully done in the fall if the ground after planting is thoroughly soaked and then mulched and the tops are wrapped in burlap or other protective material to prevent the drying of the top. On the Pacific Slope and in the warmer parts of Arizona and New Mexico there is not cold sufficient to interfere with

transplanting but the determining factor is the water supply and the time of transplanting has to be determined by the presence of sufficient moisture.

In pruning at transplanting the general shape or outline of the plants should be maintained as nearly as possible by removing whole limbs rather than cutting back the ends of them. Of course if severe pruning must be done then both methods have to be used.

Where quick results from planting are desired, or results with the least trouble, then nursery plants should be used. On the other hand in remote districts where there is no difficulty in getting permission to dig plants from the wild there is an attraction in using native material in beautifying the home or school surroundings. In addition to the greater appreciation that is likely to come from having selected and dug the plants there is also the probability that the result will be more harmonious and appropriate, because there is not likely to be any discordant note among the wild things as there might be where plants from many unknown corners of the globe are brought together in a single planting. On the other hand the delay is greater because with many plants, especially if large specimens are attempted to be moved



VERY NECESSARY PRECAUTIONS

Driving substantial stakes to hold a tree box firmly so that it will be a protection and support to the tree.



so much of the top must be cut away in order to compensate for the root loss that there is practically none left and a new top must be grown. The loss ordinarily in transplanting collected plants is large and it comes mostly from reluctance to cut away enough of the top to compensate for the great root loss that nearly always occurs. This reluctance comes from the feeling that this severe cutting of the top is destroying the plant upon which so much labor has been expended not realizing that the real destruction took place by the severance of the many roots that were left in the ground when digging.

Evergreen trees must be handled somewhat differently because they are continually full of foliage which is constantly making demands upon the roots for moisture. Because of this it is necessary to move them without loosening the contact of the roots with the soil. In other words a mass of soil as big as the root system must be taken with the plant when it is moved. If this mass of soil becomes cracked and falls away from the roots injury is likely to result because the loosening of the soil interferes with the absorption of water that the foliage needs. Then too in the case of the cone bearing trees a little exposure of the roots to the air will dry them which results in hardening the resin of the sap and the

root is killed more surely than a deciduous plant would be with several times the same exposure.

Another difference in the handling of evergreens is in the time of moving. Here again the demands of the foliage for moisture make necessary a different procedure than with deciduous plants. As it is imperative that this moisture supply be as constant and abundant as possible the plants need to be moved at a time when new roots are likely to form promptly which means that the soil should be sufficiently warm to stimulate this growth. This condition usually exists the six weeks after the proper time for planting of deciduous trees in the spring and a like period in the late summer or early fall ending at least six weeks before the ground begins to freeze at night. To be specific this time on the 40th parallel would be most of May and June and most of August and September.

In addition it is important that newly planted evergreens be kept well watered while they are becoming re-established and it is a help to have the tops sprayed two or three times a day to reduce the evaporation from the foliage as much as possible. In a windy location it is a help to have the trees protected on the windward side for several weeks or months.

## FORESTRY IN CONNECTICUT

(Continued from page 218.)

### CASH PRIZES FOR PLANTING COMPETITION.

The Connecticut Forestry Association offers three prizes for afforestation by either seeding or planting, during the years 1921 to 1924, inclusive. The prizes will be awarded in 1926. The first is \$75.00 in gold; the second, \$50.00, and the third, \$25.00.

Contestants for these prizes must be tax payers (corporations excluded) in Litchfield County, Connecticut.

All stands entered for the competition will be examined by the committee on afforestation within three months of the date fixed for the fall meeting of the Association in 1926 when the prizes will be awarded. Contestants will be required to show the committee the stands entered and submit a report showing the origin of the seed or planting stock, the date of afforestation, the age and size of the stock used, and the itemized cost.

Those who enter the competition are required to send their names and addresses and the location and size of the areas

entered, to the Afforestation Committee, Connecticut Forestry Association, 242 Prospect Street, New Haven, Connecticut.

Professor Hawley is Chairman of the Committee on Thinnings and Professor Toumey is Chairman of the Committee on Forestation.

A campaign has been commenced to raise funds for an Association forest, which, not later than 1927 will be presented to the State in order to encourage the acquisition of more state forests. A law already has been passed to enable the acceptance of such gifts of forest lands to be managed by the State Forester like any state forest. Forestry speakers are being placed before all Rotary Clubs and Kiwanis Clubs in the State in order to make sure that the average business man understands the economic side of state forests, and forestry.

### THE FOREST RANGER

His throne, a lofty mountain peak,  
His realm, the country 'round,  
His joy, the bursting sunsets.  
His life, what God sends down.  
His law, the law of the great out-doors,  
His power, a mighty force—  
The trust of God and man combined—  
And service is its source.

—Stanley Foss Bartlett.

### MANY PREDATORY ANIMALS KILLED

The Biological Survey, which is continuing the destruction of predatory animals in Idaho, reports that during the month of November its hunters killed 428 coyotes, 42 bob cats and three gray wolves. The average kill per man was 25 animals for the month. The average cost per animal destroyed by the Biological Survey has been about \$5.00. Poisoning campaigns are being inaugurated. These are much more effective in eradicating predatory animals than are guns and traps.—*Caribou News Letter.*



## GIFFORD PINCHOT ON THE SNELL BILL

**I**N appearing before the Agricultural Committee which heard testimony for and against the Snell Forestry bill Gifford Pinchot, forest Commissioner of Pennsylvania, and former chief of the United States Forest Service first presented resolutions of the Pennsylvania Forest Commission which recorded "its emphatic opposition to those portions of the Snell bill which would deprive Pennsylvania through her representatives in Congress of any voice as to the future security of the lumber supply without which her people cannot prosper."

Outlining his views of the Snell bill Mr. Pinchot said:

"The situation is just this: Sections 1 and 2 do provide, as I see it, that what shall or shall not be done in the matter of the timber supply of the country depends upon the action of the legislatures of the timber exporting States. There are at present 15 timber-exporting States. Inside of 10 years, and I think a good deal less than that, there will be only 5, at the outside, timber-exporting States able to supply their own needs and have a little surplus for export. There are 33 States that are now dependent for their timber supplies on other States of the Union, and these States include the great majority of the most populous and most powerful States like Michigan, Illinois, New York, Ohio, Indiana, Pennsylvania, Iowa, and so on. Those timber-importing States, like my own State of Pennsylvania, can not do business unless they get the wood from the timber-exporting States. Their agriculture and their prosperity is absolutely dependent on supplies from outside. Pennsylvania imports four-fifths of its timber, and Iowa, I suppose, imports nine-tenths. Now, the people who live in the 33 timber-importing States, the Commonwealths that are short of timber, include already more than three-fourths of the people of the United States, and inside of 10 years they will include 95 per cent of them, if the population remains about as it is now. In accordance with the resolutions which I submitted from the forest commission of Pennsylvania, it is true, as I understand it, that if sections 1 and 2 of the Snell bill become law, the decision as to whether or not these greater States and more numerous States of the Union are to have lumber at all would be left to the legislatures of the few timber-exporting States over which the people of the timber-importing States have no influence at all, unless they can have it through the National Government.

"It would seem to me so evident that sections 1 and 2 of the Snell bill are hostile to the economic interests of the great mass of people of the United States that I have never believed there was any chance whatever for its enactment and do not believe so now. Moreover, if the bill were to be enacted, then it is perfectly obvious to me, at least, that it would never be given effect for the reason that what you would do then would be to put the question of the preservation of the timberlands of the country in the hands of the legislatures of the States where the lumbermen are most powerful, and take away from the people of the States where the consumers are pow-

erful—and they are the most of us and the most important—anything to say as to whether or not that timber should be preserved. My view of sections 1 and 2 has been that they never would be enacted, in any case, and in the second place they would not work if they were."

Asked by a member of the Committee to present his idea of the character of a national forest policy Mr. Pinchot said: "I think there are four or five different things that ought to be done. The first big thing to be done is to stop the devastation of privately owned timberland which is now going on. The second big thing to be done is to stop fires. But the first thing is to stop this devastation. Now, that can only be done, in my judgment, for various reasons, some of which I have given you, by national enactment of such a law as will apply uniformly to all the States at the same time. The best way in which that can be done, as I understand it, is through taxation, following the analogy of the oleomargarine bill and a number of others, and the Capper bill, which I had not intended to bring before this committee at all, in my judgment, meets the problem in a very satisfactory way.

"That bill provides that the Secretary of Agriculture shall establish standards, just as sections 1 and 2 of the Snell bill do, and that those standards having been established in cooperation with the lumbermen and others and the State forest officers in the different regions of the country, the lumbermen who cut in accordance with those standards shall pay 5 cents a thousand tax and the lumberman who does not shall pay \$5. The bill itself would raise in that way money enough to be self-supporting. Its enforcement would cost the Government nothing. It would apply uniformly to all of the States at the same time and would leave the conditions of competition between the lumbermen untouched. It would go into effect the moment it was enacted instead of having a long campaign in the State legislature after the Federal law had been passed; and in my judgment it would be simple and easy to enforce and would meet the needs of the situation.

"I think there ought to be money appropriated for cooperative fire protection. Then I think a similar stimulation could be brought about, that would be very valuable, by cooperative planting. The results you get by that sort of thing are considerably larger than the amount of money that is spent. I think that more land ought to be bought for National Forests, and I think that the timbered public domain and the timbered Indian reservations ought to be classified so that those parts of them which properly ought to go into National Forests can be placed there.

"It is a large statement, of course, to make, that the biggest economic question before a Nation such as ours is this timber question, but I think the proof is absolutely clear and irrefutable. Half of the sawed lumber used in the whole world is used in the United States, and there is no other country that has established its agriculture



and its industry on a basis of so lavish a use of wood as this country of ours. Our whole standard of living, our whole business and commercial organization, is based on the use of about 300 board feet per capita, where the nations of Europe use only half as much. We are now facing the absolute certainty, within a comparatively small number of years, of having to reduce that consumption of timber; and timber is the most universal of all materials and has more to do with the standard of living, in my judgment, than any of the other basic materials. We are facing the necessity of having to reduce that to one-half or perhaps to one-third. That is going to mean a complete overturning of our methods of agriculture and industry.

"You understand that half of all the wood used in the United States is used on the farms. It takes one-half of our total consumption of timber to grow our food. Then, after that food has been grown, it has got to be shipped by rail. You can not ship a pound of meat without the help of the forest. You can not load a box car, you can not get out a railroad tie, you can not mine a ton of coal or a pound of iron without the forest. You can not provide a suit of clothes without the forest, or eat a meal without the forest. The whole thing is interwoven in our national life to a point that makes the use of wood in some sense the critical thing in establishing our costs of living and our commercial and individual welfare. It is the key to our individual safety and comfort and prosperity.

"Now, that being true, we are coming as a Nation right square up against the place where our own supplies will be exhausted, and very completely exhausted, and we are facing a situation where we can not get what we have not at home anywhere else in the world. I do not think the people generally have come to realize what the thing means. All the great civilized nations of the world, with three or four exceptions, are timber-importing nations. We are not yet, but as individual Commonwealths we are in an overwhelming degree—two to one. The nations of Europe are far more so than the States of the American Union.

"All the big nations of Europe, with the exception of Russia, Sweden, and Norway, and Finland, a small nation, part of Rumania—the recent small Governments are so mixed up that I can not name them—but with the exception of those four or five nations all the nations of Europe are unable to supply the needs of their own people. Germany has been a timber-importing nation since 1870. France, England, Italy, Spain, Portugal, Greece, Holland, Belgium, and all the rest of them are obliged to go to the few parts of the world that have got timber yet and bring it in. In other words, there is nothing we can expect from Europe when our pail goes dry. As to the Canadians, if we got every stick they have it would only keep this Nation going about twenty years.

"The Canadians are not going to help us out much. They have made that perfectly clear, and, as I said, if we took everything they have got, it would be gone in 20 years. Mexico is a timber-importing country right now. Mexico imports about one-half the wood it uses, although it has considerable areas of tropical wood and a

great deal of undeveloped timber, and yet from the gigantic necessities we have of half the sawed lumber of the whole earth, the Mexican supply is not large. Every nation in South America, so far as I know, is a timber-producing nation. Brazil imports, if my memory serves me rightly, about 70 per cent; the Argentine, I think, about the same; and all of them are timber-importing nations. Of course, there is a vast body of hardwood in the Amazon valley, but it is not the kind of timber we use; and as you follow this matter around the world you get the same result. Australia is a timber-importing region.

The United States is in this exact situation, and I think this statement can not be successfully controverted, we are facing a time in the very near future when this absolute necessity of life, as we have it now, is going to be short and when we cannot get it outside of our own boundaries except at excessive prices, and not very much of it at that. In other words, I think it is a fair thing to say that the biggest economic question before this Nation, far and away, is this matter of where we are going to get the lumber, without which we can not grow crops or manufacture goods or ship goods or do business. I wanted to present that as strongly as I could in this statement to the committee, because the thing is just beginning to be understood. I want to make the point, too, that this timber question is vastly more important to the States and to the regions that have not got any timber than it is to the timbered ones. Take my State of Pennsylvania, the Pittsburgh region alone uses as much timber as the whole State produces, and if it were not for the timber that comes in from the outside there would be an absolute collapse of industry in the State of Pennsylvania. It is enormously more important to us what happens in the forested States, than it is to the people in those States, because all we can expect to get is the crumbs that fall from their table. It is exactly so with the great agricultural States. They have got to depend on the lumber from elsewhere, and it is a whole lot more important to them what happens to the forests in Washington, Oregon, and California, that have half of the timber in the United States, than it is to those States themselves, because as long as there is any lumber the people in the States where it is will get it.

"Another thing, it is the man in the city who is going to feel this pinch first. You grow crops on the farm, taking one-half the wood used in the United States, and when they are grown you have got to move them. You have got to transport them and you have got to pack them. It takes something like one-fifth of all the sawed lumber, according to a figure that has been given to me, used in the United States for packages alone, and the fact of the matter is that it is the people in the big centers of population and in the densely populated States that are mainly concerned in this thing and whose interests have got to be first considered.

"It is not going to be the foresters who will settle this question and it certainly is not going to be the lumbermen. It is going to be the great mass of consumers among the people of the United States, and the sooner they can be made to understand how critical their situation is, the better it is going to be for them, in my judgment."



## PRAISE FOR HARDING'S CALL TO

**I**MPORTANCE of forestry to the farmer so well brought out by President Harding in welcoming the delegates to the farm conference in Washington was taken up by the newspapers in their editorial co-operation with the American Forestry Association's educational campaigns. The importance of forestry to the entire country has now become, thanks to the editors' cooperation, the most talked of subject in their columns. The editors are eager to print facts and figures on this big subject as part of their public service. Some of the comment follows:

*Washington Post:* At the opening of the farm congress the other day President Harding directed the attention of the farmer to the importance of forestry. In the early days of the "go West, young man," period of the nation's history trees were in the way. Agriculture was the big thing, and the clearing of the land for corn and wheat was the hardest part of the job. In those days every farmer had a woodlot, but they are scarce today. A man with a walnut grove has a fortune, so great is the demand for that timber.

Now the American Forestry Association meets in annual session to mark the fortieth anniversary of its organization in 1882 at Cincinnati. In those days the man who talked scientific forestry did not make much progress, as no one took him seriously. But today the center of the lumber industry is nearing the Pacific coast. The average farmer will spend \$1,000 a year on improvements on his place. Instead of going out to the "lower forty" for his lumber he goes to town. He also goes to town for his fuel nowadays.

President Harding did well in directing the attention of the farmer, and therefore, the country, to the need of putting idle acres to work growing trees. That is what the American Forestry Association wishes to do through a national forest policy. Such legislation is before the Congress. "We must have forest products close to the point of consumption," says Charles Lathrop Pack, president of the Association. Another 40 years may be too late. A little legislation would not be a dangerous thing.

*Tuscaloosa News and Times Gazette:* The Country Gentleman suggests editorially that the only way to insure a permanent lumber supply is to revise the methods of handling timber. In the past lumber has

been mined from our forests instead of raised and harvested. There is no way for the miner of minerals to renew the contents of his mine, so he takes out the good ore and lets the shell cave in. There is a way to renew the products of our forests,

of forests to a nation and the menace which hangs over the remaining forests of the United States, is really the process of growing crops and harvesting them. It is really a very simple problem from the material side. The hard part lies in convincing farmers, foresters, lumbermen and even city-dwellers that the problem is theirs, that they are all individually responsible for the nation's future supply and immediate forestry policy.

### Have a Care, Golf Players!

**A**TLANTA JOURNAL. The recent Forestry Congress in Atlanta, coupled with the growing interest in golf on the part of the public as well as players, makes particularly timely some statistics compiled by the American Forestry Association regarding golf sticks, where they come from and what goes into their making.

Thus far the advocates of forest conservation have been generous enough not to look with extreme disfavor on the use of wood for golf clubs, but if golf continues to win adherents at the rate it has in the past few years, and the factories are forced to double their output of shafts for golf clubs, one hesitates to say what will happen.

Since two million people in the world are said to be handling golf sticks every week, and since this number are said to own from ten to sixteen million of them, the amount of wood used for their production, it can be told at a glance, is no small quantity.

Golfing enthusiasts as yet have nothing to fear from the efforts of the Forestry Association to conserve America's timber supply. And should matters reach such a pass that a movement is started to restrict the unlimited manufacture of wooden golf clubs, the patrons of the old Scotch game can always play one trump card. They have but to introduce the conservation leaders to the nearest links, let them play their first nine holes and the trick will be turned. Once a golfer, always a golfer. The veriest dabbler will yield whatever conservation principles he may have in unqualified allegiance to the sport that is at once his glory and his despair.

Editor's Note:—The thousands of golf players among the Association's members suggest no golf course is ideal unless it has several tracts of woodland on or around it. Golf courses and woodlands are first cousins.

but because there were so many to begin with we have regarded them as inexhaustible, taking out the timber recklessly and leaving the stumps and cut-over areas to burn or lie idle. Reforestation, now sought earnestly by those who appreciate the value

*Rochester Democrat Chronicle:* Unless most of the country dwellers and a large part of those who are housed in cities become aroused to the necessity of replacing the forests, there is serious trouble ahead for both city and country. Within the last few years there has been something of such an awakening. One of the concrete results of this is the Snell bill which is now in Congress. Congressman Snell, its sponsor, is from the forest region of Northern New York and is familiar with the forest needs. It is up to the public generally to get back of this bill and see that it is put through as the first of many remedial measures that must be enacted.

*Atlanta Journal:* As a peculiarly interesting phase of the reforestation movement now astir throughout the United States, Chief Forester Greeley urges the wisdom and advantage of each community's having a forest preserve of its own. This counsel is not visionary or theoretic, but all compact of the hardest common sense. Failure to replenish the dwindling forests will lead to agricultural impotence and industrial stagnation as certainly as the way of the prodigal son led to rags and husks. No region has more at stake in this matter than Georgia, with her primary interests in the soil, the conservation of which depends vitally on the natural protection which forests afford. By acting betimes every county and town in Georgia can acquire a forest reserve which a few generations hence will be invaluable as a civic investment and at the same time of immense worth to farming interests.

*Louisville Courier-Journal:* The Department of Agriculture insists that bird life is so necessary to farming, and fruit growing, that the soil industries actually are menaced by continued destruction of remaining timber tracts. National Forests,



# FARMERS URGING IMPORTANCE OF FORESTRY

forests owned by large industries, forests owned as game preserves by wealthy sportsmen, forests remaining where the land is unfit for cultivation never will restore bird life on productive farms. But if every farm had a wood lot productively maintained, yielding continuously, yet not decreasing, the bird life which the Department of Agriculture says is enormously valuable to agriculture would be restored. It would be distributed where it is needed. Moreover wood—unmerchantable timber—as fuel on 7,000,000 farms, used to supplement coal or used exclusively, would take millions of dollars annually from the cost of living on the American farm.

At present, the power saw is destroying remaining timber rapidly because coal—hailed from distant mines—is too costly. No provision is made for renewal of supply.

In the farm wood lot, assuredly, lies the possibility of supplies for the wood using industries. But will the possibilities of the wood lot be realized unless Federal or State governments undertake to build up forestry on farms?

*Washington Herald*: "As our timber supply is reduced, his service in conservation and expanding the timber resources of the farm will be increasingly important, necessitating an intimacy with forestry and forestation."—President Harding to the Farm Congress.

In closing his welcoming address at the opening of the Farm Congress, in the words quoted above, President Harding took up one of the most vital questions before the country today. That expression of opinion on the part of the President should be a cause for rejoicing by members of the American Forestry Association. Forestry began in the late seventies. The pioneers were in the same category as the man who spoke seriously of flying machines, women voting, prohibition, and other things that have since come to pass.

Now the pioneer, however, is in the position of him who can laugh last.

But like the Roman of old, who stood up in the senate day after day and declared that Carthage must be destroyed until at last they believed him, so the American Forestry Association, day in and day out, is preaching forestry and reforestation throughout the land.

The president of the American Forestry Association calls the press of the country the voice of the people. He knows the newspapers reflect that voice. He knows the newspapers endeavor to reflect that voice accurately. He also knows that nothing impresses the Representative so much as an expression of opinion from his own

district. The newspapers have answered his call in fine fashion. The Herald is pleased to know that its editorials and Darling's cartoons have a place in the "voice of the country" as presented by Mr. Pack. The question of forestry legislation is one on which the whole country must wake up.

*New York Commercial*: To the lay mind it would seem as if there ought to be trees enough in the United States to provide for our timber needs for generations ahead, that is, if the layman gives the matter any thought at all, which he probably does not; while even those who would give the matter consideration if they thought it worth while do not even know that it is worth while. Thus when the matter is brought to public attention, it comes as something of a shock to realize that even now we are dependent upon imported lumber to a tremendous extent. Mr. Charles Lathrop Pack, president of the American Forestry Association, drew attention to the seriousness of the problem confronting us in the matter of future supplies. The lumber cut in the State of New York alone has dropped almost 60 per cent since 1910, and the building industry in this state is using imported lumber in the ratio of about one to six. It seems incredible that local interests have to depend upon lumber which requires a journey of 3,000 miles by rail before it is used.

The economic importance of an adequate timber supply is so great as to demand immediate consideration, and the fullest support should be given to the measures now before Congress designed to aid in the restoration of the forests.

*Phoenix Gazette*: "In the meantime, what?" asks American Forestry. During the next half-century, while we draw from the forests of Canada, are we going to put our own forests in order? Effective forestry, which includes the curbing of the fire menace, is one of the most important problems before the United States today and it directly affects every newspaper, every homebuilder and practically every industry. It is the duty of every newspaper both from a public and individual standpoint to inform itself and reiterate the need of a definite constructive forestry policy in the United States based on our estimated needs half a century from now.

*Burlington, (Vt.) News*: Increased production is the cry of the times. Increased production from land is just as important as increased production by human labor. The idleness of one hundred million acres of forest land is just as serious

today and more lasting in its effects than the idleness of thousands of skilled mechanics, the American Forestry Association argues in its campaign for a national forest policy. It is nothing short of national folly to go on, year after year, devastating millions of acres of forest land and failing through bad organization, through inadequate public effort, and through a lack of clear definition of public and private responsibility to produce one of our most essential raw materials.

*Greeley Tribune*: On the whole the situation is rather hopeful. It is even probable that future generations may have all the timber they need, though the present generation will continue to suffer from the waste and improvidence of the past.

*Akron Beacon-Journal*: It is a great beginning that the government is making in the conservation of the timber resources. The movement in this direction will not end until the preservative spirit is applied to every woodlot in the land.

*Albany Journal*: Making report to the American Forestry Association, Dean Reisner, of the college of agriculture and forestry of the University of Nankin, China, points to the latest great flood disaster, as an example of the effect of neglect of reforestation, and therefore a warning to the United States to extend and expedite such work. Reforestation is a task that ought to be undertaken and continued, year after year, throughout those regions of this country where so long the cutting of forests has been going on without adequate work of restoration.

*Oil City Blizzard*: Although Germany suffered a tremendous loss in timber resources as a result of the war Uncle Sam can go the Germans one better. For example, says the American Forestry Magazine, "Germany, because of the war, lost about 21,547,520 acres of land exclusive of plebesites. The United States, during the period of 1916-1920, inclusive, burned up 56,488,307 acres of forested area—over two and one-half times as much as Germany's entire loss—an area greater than New York and Pennsylvania combined, or of Minnesota, Kansas, Idaho, or Utah." Uncle Sam had better take a hitch in his belt. Business men are paying \$15 per thousand on freight shipments of lumber from distant points. These manufacturing plants are right in the center of where once was "all the lumber in the world," according to some people.



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### CONFERENCE ON STATE PARKS

The Second National Conference on State parks, which has been called in the interests of State park development by John Barton Payne, Chairman of Conference, will be held at the Bear Mountain Inn, Palisades Interstate Park, New York, from May 22 to 25, 1922.

The First National Conference on State Parks was held in Des Moines, Iowa, in January, 1921, and since that time a great deal has been done in this work. The first meeting awakened a great interest in the movement and the work of the various states has progressed steadily since that time. The importance of a country-wide development of State Parks cannot be over-emphasized. These parks, when well developed, produce revenue, stimulate travel to and through the state, preserve the beautiful native scenery and historical spots, and in many ways react to the benefit of the state. They will especially appeal to the motorist, from the fact that they will make interesting stop-off places in connection with tours across the country. One of the features of these parks undoubtedly will be the establishment of free public camps, which have been so popular in the national parks.

Two days of the conference will be devoted to business sessions, while the remainder of the time will be utilized by trips of inspection through the Palisades Interstate Park, West Point, a new state highway around Storm King, the New York Zoological Park, and the Bronx River Parkway. This will give the delegates an excellent opportunity to see the splendid state park development in this section.

### CAMPING IN STATE FORESTS

The Department of Forestry will develop thirteen public camp grounds in the State Forests this spring. They will be fully equipped for the convenience of campers and sportsmen, and will be ready for use when the trout-fishing season opens, April 15, in Pennsylvania.

To promote wider use of the State Forests and to encourage out-door recreation in Pennsylvania, the Department will provide open-front shelters, or lean-tos, stone fireplaces, walled-up and covered springs, comfort stations, and in some instances, public telephones at the various public camp grounds. Use of the camp grounds will be free, but permits issued by the local forest officers will be required when campers occupy a camp for more than two days.

Nine of the camp grounds will be equipped and situated particularly for automobile-tourists who carry their camping outfits with them. These camps will be along

improved State highways. One of them will be developed at Caledonia Park, on the Lincoln highway, between Gettysburg and Chambersburg. Thousands of automobile tourists, many of them campers, motor over that highway to the Battlefield every summer, and it is believed they will use the camp ground maintained by the Department.

Several camps will be off the main highways, in the woods, for the accommodation of fishermen and hunters. Other camp grounds will be developed when the Department has funds available for the project.

"AMERICAN FORESTRY is a very beautiful magazine. I find each copy 'the best copy.' From an artistic point of view I appreciate the cover with its simplicity and perfect harmony of color and design. And there is so much between the covers—the beautiful illustrations so artistically arranged and the valuable information contained. It is the 'genuine thing' in my work of teaching campers the great importance of the splendid work of the American Forestry Association, of which I am proud to be a member."

MRS. WILBUR F. CRUMMER.



## What Keeps the Bunch Smilin'--

WHEN you roll out in the morning—one of those real, "up-an'-at-em" mornings—doesn't it help a lot to know that you've got the best saw in the world—all shining and fitted up just right—waiting to help you through the day's work?

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## Lecture-Recital

On April 21st, Guy C. Caldwell, specialist in Tree Surgery, Naturalist, Traveler and Musician, will leave Boston on an extended tour of the Southern and Western States. He will accept lecture-recital engagements from Boy Scouts, Girl Scouts, Camp Fire Girls, Audubon Societies, Nature Clubs, Etc. On April 28th he will lecture for the Ohio Audubon Society at Cincinnati. Subject:

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"You are interpreting the works of God to the people whom you reach and it is a glorious opportunity."—A. B. Seymour, Cryptogamic Herbarium, Harvard University.

"We have never had such a treat as your performance on the mandolite, and I am frank to say I did not know it was capable of producing such harmony as you were able to get from it. The boys have been trying to imitate your bird calls ever since. Altogether the entertainment made a most delightful evening."—H. M. Scarborough, N. Y. Military Academy.

Among other institutions that have secured Mr. Caldwell's program are:

BROOKLYN INSTITUTE OF SCIENCE  
HARVARD CLUB OF BOSTON  
ESSEX INSTITUTE, SALEM  
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ST. GEORGE'S SCHOOL, NEWPORT  
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## FORESTRY IN TEXAS

Much constructive work was accomplished at the recent annual meeting of the Texas Forestry Association, at Houston. The attendance was the largest in the history of the organization and prominent conservationists and lumbermen were present. Col. W. B. Greeley, chief of the United States Forest Service, was the guest of the association and the first speaker. His address was devoted mainly to the importance of reforesting the vast areas of idle lands, formerly in timber and now better adapted to the growing of timber than to any other purpose. This problem, Col. Greeley said, applied particularly to Texas and the Southern states, because "the future development of the South demands an abundant supply of timber for the economic development of its industries. \* \* \* The slogan of the country once was 'Back to the land.' Now the cry from all over the United States is 'Back to the forest!'"

The policy of the association and its

future activities were covered by the adoption of ten resolutions and the platform outlined is a highly constructive one.

## DELAY CAUSES BLISTER RUST

A delay of one year in destroying the wild currants and gooseberries as a protection against the blister rust will result in the loss of at least 11 per cent of the trees in a young white-pine plantation at North Hudson, New York.

This planting of white pine was made for the purpose of producing another timber crop on an area previously denuded by fire. Three-year-old trees were set out in the spring of 1919, but the wild currant and gooseberry bushes on the tract were not destroyed until 1920, a year after the planting. The removal of the currant and gooseberry bushes is necessary to save pine trees from the blister rust, because they are the only means by which this disease can spread.

The pines in the plantation were examined in the fall of 1921 by agents of the United States Department of Agriculture. As a result of the trees being exposed for a single year to the blister rust on the currant and gooseberry bushes, it was found that 86 trees showed infection originating in 1919; 197 were missing and 483 showed no sign of infection. Thus 15.10 per cent of the living trees or 11.20 per cent of all the trees set out on the plot were infected by the blister rust in a single year, and will succumb sooner or later. If the bushes had been removed before the pines were set out, this loss would have been prevented.

## TREE PROTECTION INSTITUTE

Connecticut is the first State to create a Tree Protection Examining Board. This board requires that no one shall practice tree preservation without first passing a written and oral examination on insects, tree diseases, tree surgery, tree life and growth, and tree species. Upon successfully passing this examination a State Certificate is given.

To further educate the workers, and create an added interest in the care of trees, institute meetings are held which aim to bring all tree wardens, superintendents of trees, park superintendents, and all lovers of trees together to hear able addresses, and to take part in the discussions.

On Tuesday, February 21, such a meeting was held at the Connecticut Agricultural Experiment Station, New Haven. Dr. W. E. Britton, Chairman of the Board, opened the institute. Dr. G. E. Nichols, of Yale, gave a very clear and comprehensive talk, well illustrated, on "The Living Tree." Prof. S. P. Hollister, of Connecticut Agricultural College, next talked on various pruning methods, and spraying programs.

Prof. J. W. Toumey, Dean, Yale For-

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estry School, followed with a very timely and practical address on the effect of smoke on trees.

Prof. E. P. Felt, New York State Entomologist, told in a practical manner what his observations have been of the use of oil sprays. J. F. Collins, United States Department of Agriculture, used slides to illustrate his address on pruning and cavity work as applied to shade trees.

A discussion led by Dr. Geo. E. Stone, of Amherst, Massachusetts, brought out the poor work done by many poorly trained tree workers. He was loud in his praise of the tree wardens of Massachusetts, many of whom fill the office without compensation, and are proud of their guardianship over the trees of their boroughs.

Mr. F. A. Bartlett, of Connecticut, demonstrated the modern way of treating trees for decay.

Dr. Felt again addressed the Institute with an illustrated talk on "Some Common Insect Pests of Shade Trees." Attention was drawn to the vital need of efficient spraying to control most of these enemies. He also suggested the various municipalities refrain from planting one or two varieties of trees and advocated the planting of several varieties, devoting certain streets to certain species, if such a uniformity is desired.

The Institute closed with a report by Mr. W. O. Filley, secretary-treasurer of the Board, on the work of that body.

#### BONUS FOR PLANTING TREES

In order to encourage reforestation in Nova Scotia, Mr. Frank J. D. Barnjum, of Annapolis Royal, N. S., is offering a cash bonus of \$2.00 per acre to the farmers of Nova Scotia for every acre of spruce or pine seedlings planted by them on their farms the coming spring of 1922, no one farmer to be paid a bonus on more than 100 acres, so as to distribute the plantings as widely as possible over the Province. Location and method of planting must be approved by the Government Forester of Nova Scotia, if one is appointed, otherwise by Mr. Barnjum's forester, to insure satisfactory results.

#### DISTINGUISHING MAHOGANY AND WALNUT FROM RED GUM

IN the manufacture of furniture and cabinets a great deal of red gum is used as an imitation of mahogany or Circassian walnut. When red gum is properly finished it can be made to look so much like either of these woods that only by very careful observation can the true be distinguished from the substitute. There is a very distinct difference, however, between red gum and mahogany or walnut. This difference lies in the size of the pores.

In mahogany, Circassian walnut, and black walnut, the pores are so large that they can be seen very distinctly on a smoothly-cut surface of the end grain,

where they appear as minute openings smaller than pin holes but visible without magnification. On surfaced faces the pores appear as fine grooves, running parallel with the grain. They are even visible through the varnish, appearing as dark lines.

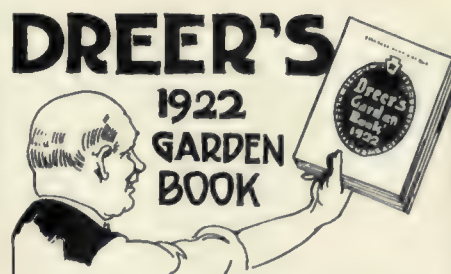
In red gums the pores are much smaller and can be seen only with a magnifying glass.

#### EVERY STATE USES WEST COAST SHINGLES

WESTERN red cedar shingles from Oregon and Washington are shipped to every State in the Union. Minnesota is the largest single purchaser of Washington shingles, while California is the biggest buyer of Oregon shingles. The Middle Western States are very heavy buyers while about eight per cent of the total sales go to the Southern States.

Oregon and Washington produced six and one-half billion shingles in 1919, or two billion more than in 1918. The cut for 1919 was less than that for 1916 or 1917, and far below that for 1909.

Western red cedar is the leading shingle wood in the United States. Shingles manufactured from the wood in Oregon, Washington and British Columbia represent 85 per cent of the total production of the country. Shingles are also made from cypress, white cedar, redwood and yellow pine. Douglas fir shingles were manufactured commercially in 1919, largely because of the scarcity and high cost of western red cedar logs.



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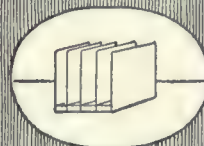
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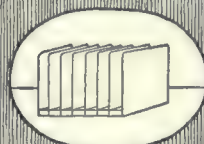
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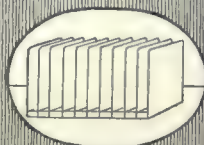
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## CANADIAN DEPARTMENT

Ellwood Wilson.

The standardization committee of the Quebec Society of Forest Engineers was held in Quebec City to discuss a standard method of forest survey and report. All the license holders have to make reports to the Government and their foresters felt that uniformity in these maps and reports would be advisable. A sort of standard practice will be worked up which will make all forestry reports comparable.

Owing to the large reduction in the cut of timber in Ontario, Quebec and New Brunswick, the revenues from the timber cut on Crown Lands will be much reduced. In Quebec this will be to a large extent offset by the revenue from Government liquor sales, but in New Brunswick it will necessitate some increase in taxation.

Mrs. E. B. Eddy, wife of the late E. B. Eddy, who owned large pulp and match mills in Hull, Quebec, has just given a large sum of money to McGill University to be used in founding a chair of industrial chemistry. As the pulp and paper industry is one of the most important in Canada and also the source of Mr. Eddy's fortune, it is suggested that a chair of pulp and paper making would best carry out his wishes and be of the greatest practical value.

The Ontario Forest Service is making plans for a large reforestation scheme which will be carried out with the co-operation of the counties and should mark a great step in advance in forestry. Forests which will either create or maintain local wood-using industries and supply cheap fuel are very much needed. A country with the long cold winters of Canada and without adequate coal supplies needs to look a long way ahead for wood fuel. Strange as it may seem, firewood in Quebec is very expensive, bringing even at this time of low prices ten to twelve dollars per standard cord, and in many cases being hauled as much as ten to twelve miles. The sections surrounding many of the newer villages are almost treeless so far as trees large enough for firewood are concerned and people are burning small birch and poplar poles down to two inches in diameter. In the settlers' eagerness to get their land under cultivation they have cleared and burnt areas which should never have been denuded of timber.

The Messrs. Widegren, of Heresud, Sweden, have developed a logging railway in which the rails are whole birch trees, or other suitable species, laid on wooden

sleepers. The rails are hewed a little or sawed on top, and one of them on the two sides. The locomotive is a converted motor truck with wheels with very broad tread and tired with heavy rubber. This enables the trucks to run on crooked rails and around very sharp curves, so that the poorer trees can be employed. The train is held on the rails by guides attached to the wheels on one side of the train. The gauge does not need to be exact and the wear on the rails is very slight. In Sweden the railway has been built without any roadway, the rails being carried on timber trestles instead of fill. The locomotive used has been a 35-H. P. one, weighing five tons. One of 100 H. P. is building. The cars weigh about two tons and load six tons each, and with the exception of the trucks are built in the woods. The cars can be of any practicable length and the locomotives are built in sections so they can be transported in pieces and put together on the job. The speed has reached 15 to 18 miles per hour and the longest road so far built is 18 miles. Construction costs have been one-half those for a steel track road. The ties last as long as do the ties of an ordinary railroad, and the wooden rails will outwear the steel ones and are only subject to decay. In regions difficult of access from existing railroads the above may prove useful for logging or supply purposes.

Mr. Frank J. D. Barnjum, of Annapolis Royal, N. S., has for years taken a keen interest in the intelligent use of Canadian timber lands and has determined to devote his time to this end. He has been a generous contributor to the Canadian Forestry Association, and has written several very interesting propaganda articles urging an embargo on the export of freehold timber. As a further step in his work he has now offered a cash bonus of \$2.00 per acre to the farmers of Nova Scotia for every acre planted with spruce or pine during the spring of 1922.

No one farmer will be paid a bonus for more than 100 acres and the location and method of planting must be approved by the Provincial Forester, if one is appointed, if not by Mr. Barnjum's own forester. This is certainly a most public-spirited move and should be a great incentive to farmers to establish woodlots on their farms. The white spruce grows excellently in Nova Scotia, and the farmers would always be sure of a market from the time their plots were ready to thin.

**Plant "Roads of Remembrance"**



## WAYSIDE TREES

In writing of the value of roadside tree planting Mr. M. H. Morrison, honorary secretary of the British Roads of Remembrance Association says in the *London Times Weekly*, of July 15:

"If rural industries are to be promoted with the backing of the Government Departments, may I be permitted to suggest that the planting and care of trees along road and rail side and in small bits of waste or wooded land scattered over the country will call for a place in the scheme, and for consideration from this point of view?"

"In France a certain number of rural industries are provided with material by the roadside trees, the profits from which contribute toward the cost of road maintenance. To mention one example: the cases in which champagne is packed are made in great part from the timber of wayside poplars, a wood which does not splinter and which holds nails firmly. Elsewhere on the Continent the growing of fruit and nuts alongside the road, and in Holland alongside the railway, has proved profitable. There follows naturally certain subsidiary interests, as bottling, drying, pulping, jams, and syrups.

"Certain Government Departments could combine in taking a first experimental step. The school garden, where could be raised the seedlings for trees, might be supplemented by arboretum or orchard. If there is no bit of waste land in the vicinity that would serve the purpose, then the school might be entrusted with the planting and care of a suitable stretch of road. The instruction could be adapted to serve the end of education."

## SAVING THE REDWOODS

Substantial progress in the movement to save the Redwoods of California is announced by the Save the Redwoods League in its Annual Report. To date approximately half a million dollars have been applied to the saving of Redwoods in Humboldt County. The greater part of this amount has been secured during the year 1921. Foremost among the accomplishments of the past year was the securing of the state appropriation of \$300,000 to save some of the finest Redwood Groves along the State Highway in the basin of the south fork of the Eel River. Under the direction of the State Forestry Board the plan for saving groves with this appropriation has been completed. During the year the League has deeded to the State of California 263 acres of Redwood land acquired with funds donated by its members. In addition the State has acquired title to pieces of Redwood timber land previously purchased through appropriations by Humboldt County and dona-

tions from Hon. Wm. Kent and Hon. Stephen T. Mather. All of these pieces are located in the basin of the South Fork of the Eel River.

## FOREST OFFICERS ENFORCING THE LAW

"Three hundred and forty-one cases of Forest Fire Law Enforcement were handled by Forest officers this past season in California," according to the report issued by District Forester Paul G. Redington of the California District. "One hundred and fifty-two visitors in the Forests who left unextinguished campfires and 34 smokers who were responsible for the start of forest fires were apprehended by Forest officers. These fires are chargeable to ignorance of the law, negligence and carelessness. Seventy-seven incendiary fires were set in the National Forests, and cases were successfully worked up against 41 of these offenders. Fourteen thousand four hundred and forty-six dollars in fines and settlements were collected for failure to comply with the Federal and State fire laws."

"Invoking the law has become necessary," Redington states, "when it is considered that 992 fires this past season are directly attributable to negligence and carelessness of man. From 1911 to 1915 there has been a steady increase in the number of man-caused fires, and while a small reduction has been effected the total number still constitutes a serious menace to the welfare of our National Forests."

The press of California has assisted the Forest Service in bringing home to the people of the State the necessity for care with fire in the Forests. Apparently the publicity and educational campaign in itself has failed to bring the desired results. Redington states that in view of this situation stringent enforcement of the fire laws will be carried out this coming season.

## USING STATE FORESTS

The Pennsylvania Department of Forestry has started plans to encourage wider use of the State Forests this summer by the junior outdoor organizations of Pennsylvania. Efforts will be made to have them take up permanent camp sites in the forests, and the District Foresters will co-operate with the leaders of the organizations in the selection of desirable camping grounds.

For the benefit of the boys and girls of the State, the Department is preparing a guide to forestry, which will be published and issued early this summer. Copies will be distributed free to all applicants.

Some of leading boys' and girls' organizations to be reached by the Department are The Woodcraft League, Knights of St. George Cadets, The Boy Scouts of America, Campfire Girls, Girl Guides, American Forestry Guides, and kindred groups.



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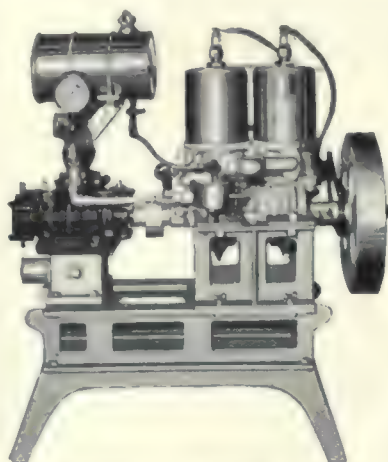
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Care AMERICAN FORESTRY MAGA-  
ZINE, Washington, D. C.

## Pleasant Things Taken From Letters to the Editor

"I would be sorry to miss any one of the numbers of AMERICAN FORESTRY, as it is both interesting and beneficial to me in my own line of work, tree surgery."

E. F. GEOFFRIES.

"I am in receipt of 85 Memorial Tree Certificates of Registration, issued by the American Forestry Association, Washing-ton, D. C. This certificate will be a sacred treasure by the relatives of our hero dead, and it is a splendid tribute to them. Your association is to be congratulated on the inception of this tender memorial."

GEORGE B. ORLADY.

President Judge of the Superior Court of Pennsylvania.

"Your magazine contains some very in-teresting and useful articles, especially those written by our prominent, *practical* for-esters."

N. C. WHEELER.

"I have read with a great deal of interest Dr. Shufeldt's article on gannets in Amer-ican Forestry for December."

Prof. F. A. WOODS.

"This is the third year of my subscrib-ing membership and I find the magazine more interesting than ever and improving with every issue."

HENRY BATSCH.

"Am much pleased with the Association's work and the delightful magazine. I hope the coming year will be a big one for for-estry."

P. A. HOWELL.

"I always love to read the magazine, as it helps me a great deal in my college work. It furnishes delightful topics and information for writing themes."

CHARLES RUSSE.

"Your magazine is just delightful and I wish the Association every success in the furthering of the preservation of our for-ests and wild life."

ELLIE A. SANDS

"American Forestry is an extremely in-teresting, helpful and beautiful magazine."

ESTHER L. COX.

"Thank you very much for the prompt-ness and definiteness of your recent letter. This speaks very emphatically and favora-bly for the service performed by the Amer-ican Forestry Association for its mem-bers."

G. H. PAINE.

"I take this occasion to renew my ap-preciation of the noble efforts of the American Forestry Association and wish it success in all its undertakings."

BISHOP SHAHAN.

"If I had the time I would be glad to do missionary work for your magazine, but this will not prevent you from a business standpoint of increasing the stand of your most admirable magazine, and everything should be done to do so."

F. D. FOOTE.

"I am a reader of your magazine and I just love it."

M. F. KENNEDY.

## GREAT DEMAND FOR TREES IN NEW YORK

The rush of applications for trees for the spring planting season now coming in to the Conservation Commission of New York State far exceeds, both in number and size, the demands of any previous year since the movement began for the reforest-ing of idle land in the State.

On January 16, the number of applica-tions was 33 per cent larger than on the corresponding date of last year.

On February 16, the number of applica-tions was 57 per cent larger than on the corresponding date of last year.

The total number of trees so far ordered is 1,411,800 and the applications are more widely diversified than ever before indi-cating that interest in the reforesting movement is general throughout the state.

The largest single order so far received

came from the Herkimer Post of the American Legion for 200,000 trees and is stated to be only the beginning of a refor-esting project by the post that will ulti-mately reclaim 5,000 acres of barren land in the northern part of Herkimer county and will call for 5,000,000 trees, the whole to be an impressive memorial to the men who served in the recent war which will in time of need furnish revenue for the relief of members of the Legion requiring it.

With the protection against fire and disease that the State is now giving to its forests, reforestation is becoming a safe and profitable investment, and that it is so recognized is evidenced by the rapid growth of the reforesting movement which now includes everything from farmers' wood-lots to large commercial and industrial plantations.



**TRI-STATE CONFERENCE**

In a paper delivered before the Tri-State Land Development Conference in Milwaukee on March 2d and 3rd, Col. W. B. Greeley declared that the Lake States present one of the most striking examples in all history of the depletion of forest resources and the wiping out of forest industries due to the idleness of cutover lands.

"The forest and cutover lands of the Lake States," Col. Greeley said, "would support permanent forest industries much more extensive than those still remaining and with annual products much more than ample for all local requirements if all of the land not needed for other economic uses were kept continuously at work growing trees. But at present over 20 million acres of land in Michigan, Wisconsin and Minnesota, which formerly grew timber, is now unused and growing nothing; and other enormous areas are producing but half a crop."

"One of the things which is to be most clearly recognized," he said, "is that growing wood must be made a part of agricultural science in the United States, as it has been in countries of longer experience, to be fitted into and correlated with the rest of our agriculture in the same way as we correlate orchards and livestock with the production of field crops."

The Tri-State Development Congress is an organization with delegates from the States of Minnesota, Michigan and Wisconsin. Its object is to coordinate the policies of the three states in the development and handling of the immense areas of cutover lands in those states. Resolutions were passed setting forth the principles for which the conference stands. Those pertaining to forestry are as follows:

"A vital part of any program of state development is an adequate, well-considered vigorous state forestry policy. As essential features of such a policy we submit: First, efficient measures to prevent forest fires that the lives of settlers may be guarded and mature and growing timber saved; second, reforestation of all state-owned lands shown by land classification to be non-agricultural; third, state acquisition of non-agricultural lands by gift, purchase or forfeiture for reforestation; fourth, immediate reforestation of all public lands on the shores of lakes and streams and state encouragement of reforestation of privately owned lands of similar nature; fifth, conservative and supervised logging on state and private lands and a wiser, more economic use of forest products; sixth, expert advice for the farmer on the management of his woodlot and state encouragement of the preservation and propagation of valuable native trees; seventh,

particular attention to the conservation and propagation of timber for pulpwood; eighth, imposition of stumpage tax, in lieu of annual taxes, upon growing timber including woodlots; ninth, the enactment of special legislative measures for the relief of extensive regions whose development is retarded by loss of tax revenue through existence within their confines of large public forests. The passage by the legislatures of the three states of such laws as will assist school and road development in their territories by sufficient state aid to offset this loss in revenue."

The Conference also passed strong resolutions endorsing the conservation of wild life and the conservation and development of the agricultural resources of the three states. It unequivocally condemned the sale of poor, inaccessible or non-agricultural cutover land to settlers. It endorsed the Mapes Bill, which provides for the establishment of a forest experiment station in the Lake States.

**BLISTER RUST QUARANTINE  
EXTENDED**

By an order of Secretary of Agriculture Wallace, effective March 15, the Federal quarantine to protect the white-pine forests of the west against the further spread of the blister rust has been extended to include the State of Washington. In view of the State quarantine, which became effective March 1, the Federal restrictions will apply to the interstate shipment of white pines, currant and gooseberry plants from the infested areas of the State only.

The infested area includes the following counties lying west of the crest of the Cascade Mountains: Clallam, Clarke, Cowitz, Grays Harbor, Island, Jefferson, King, Kitsap, Lewis, Mason, Pacific, Pierce, San Juan, Skagit, Skamania, Snohomish, Thurston, Wahkiakum, and Whatcom. The Secretary reserves the right to extend or reduce the infested area if it is found necessary to do so.

**AIR SEASONING OF WOOD**

In cooperation with the sawmills and wood utilization plants throughout the country, the Forest Products Laboratory, Madison, Wisconsin, is organizing an extensive field study on the air seasoning of wood. This study, it is believed, will be of extreme interest to the lumber manufacturer and to the wood-using industries. The purpose is to determine the piling practice which will result in the fastest drying rates consistent with the least depreciation of stock, the least amount of required yard space, and the least handling costs. The study will be carried on concurrently on both hardwoods and softwoods. All the important commercial woods of the United States will eventually receive consideration.

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**FORESTERS, UNEMPLOYED OR EMPLOYED**, having executive ability and possessing the gift to lead others, to write us. Great opportunity for those that qualify. State age, reference—(2) if employed. School graduated from (years). Confidential. Rangers also answer this. Address Box 66-66, AMERICAN FORESTRY MAGAZINE, Washington, D. C.

## ATTENTION, FORESTERS

AMERICAN FORESTRY will print, free of charge in this column, advertisements of foresters wanting positions, or of persons having employment to offer foresters. This privilege is also extended to foresters, lumbermen and woodsmen who want positions, or to persons having employment to offer such foresters, lumbermen or woodsmen.

## POSITIONS WANTED

**POSITION WANTED BY TREE SURGEON.**—Ex-service man wishes employment with some tree surgery company; 37 years old and can do any kind of tree surgery work. Can handle men and also understand landscape work. Address Box 3055, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (2-4-22)

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**GRADUATE FORESTER**, 15 years experience in Practical Forestry and Park work, with good working knowledge in the cutting and removal of timber, Fire Protection Planting, Pruning and Care of Trees and Shrubs, etc., desires position with private company or on an estate. Address Box 3075, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (3-5-22)

**YOUNG MAN**, Age 29, ex-service man in the field artillery, desires employment in some branch of forestry or as a ranger, guard, etc. Address Box 3080, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (3-5-22)

**WANTED**—Positions by three High School Graduates for forestry work or woods work for the summer. Salary or location no object. Experience wanted. Box 3085, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (4-6-22)

**GRADUATE LANDSCAPE FORESTER**, experienced in both municipal and private forestry and landscape engineering desires position with a municipality or private concern. Address Box 3095, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (4-6-22)

## \$200,000 FOR WILD LIFE PROTECTION

In making the announcement that the National Association of Audubon Societies had just received a cash contribution of \$200,000, T. Gilbert Pearson, president of the Association, stated today that this was the largest of numerous donations, which, through the years, have been received from the same source.

"This friend began by making modest gifts to our work," said Mr. Pearson, "and his interest has increased as time has gone by."

"It is an interesting and encouraging

fact," he continued, "that the best supporters of the National Audubon work for the protection of wild birds and animals are those who have had opportunity longest to watch its activities. The present gift was made upon condition that the donor's name should remain anonymous. This sum will be added to our permanent Endowment Fund and will enable the Association to enlarge its activities along the lines specified by the giver."

## PENNSYLVANIA'S FORESTS

The biennial report of the Pennsylvania Department of Forestry shows that during 1920 and 1921, 77,544 acres of forest land were purchased by the Commonwealth and placed under the administration of the department. According to the figures compiled, the State Forest area is now 1,126,236 acres, purchased at a total cost of more than \$2,546,400, an average of \$2.26 per acre.

During 1920, the area acquired was 59,783 acres. Last year there were added to the State Forests 17,760 acres. The combined area purchased during the two years was larger than the total purchases of the seven previous years, 1913 to 1919.

Last year the department made a special survey of the forest land available for acquisition by the State. Written offers of 488,353 acres were received by the department. In addition, verbal offers were made to the department covering more than 250,000 acres, making the total acreage offered for purchase about 750,000 acres.

A bond issue of \$25,000,000 is now recommended for the purchase of 5,000,000 acres of waste land in the State, and it already has been approved by the Grange. The department's studies show that if this sum is made available for the purchase of devastated forest land, the entire amount will be repaid—principal and interest—within a reasonable time by the growth of the forests.

## SANDALWOOD

**SANDALWOOD** is the production principally of the native state of Mysore, India, and the district of Coorg, in both of which places the industry is almost a monopoly of the government forest reserves. Due to the development of the sandalwood oil extracting industry, states Consul Dawson, of Madras, in *Daily Commerce Reports*, the exportation of the wood from Madras has steadily declined while that of the oil has increased. Sandalwood is the most famous of all scented woods. Its use for perfumery and incense dates back thousands of years. The latter Greeks consider it one of their greatest luxuries and no festivities were complete without it. Sandalwood figures prominently in religious ceremonies and burial rites in China and other oriental countries.



# AMERICAN FORESTRY

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## CHANGE OF ADDRESS

A request for change of address must reach us at least thirty days before the date of the issue with which it is to take effect.  
Be sure to give your old address as well as the new one.

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# AMERICAN FORESTRY

VOL. 28

MAY, 1922

NO. 341

## FIGHTING AVALANCHES IN THE PYRENEES

By Arthur Newton Pack

Special Correspondent of the American Forestry Association

EARLY last summer mountain torrents following a cloud burst spread disaster throughout Colorado, while in the early fall saw mills, shingle mills and large numbers of dwellings in British Columbia were swept away; and these are but two of many similar catastrophes which have recently occurred. The role of the

In the European Alps and Pyrenees, however, the French and Swiss governments place implicit faith in afforestation as a protection and a remedy. There, the value of the mountain regions as a playground and health resort for the people is paramount, and if an avalanche sweeps down some spring to wipe out the smallest cure village which is then preparing for the influx of summer guests, it immediately becomes a matter of grave concern to the National Forestry Bureau.

Nestled in a beautiful mountain valley only a few miles from one of those storied, robber-infested passes leading from France to Spain, lies the famous resort of Bagnères-Luchon, visited every summer not only by the French, but by travelers of all nations. Back in the year 1875, a terrible avalanche gathered up among the snows of the bordering mountains and swept down across the little



THE CRADLE OF AN AVALANCHE

Up near the timber line is where the relentlessly sliding snows must be dealt with. Several stone barrages and preliminary plantings are here shown.

forests as a protection against landslides and floods may well be a much argued subject, but it was undoubtedly true in regard to the British Columbia flood that heavy clearing of land by the logging companies, followed by repeated fires, did add materially to the overwhelming suddenness of the disaster.



WHERE TREE PLANTING IS HAZARDOUS

In order to plant the seedlings, sometimes a man was lowered from above on a rope ladder, or a human chain was organized. At the extreme left is the little hut occupied by the workmen.



river above the village, so that for a week or more the whole valley was dammed. Then the flood broke, sweeping down upon the town, and carrying destruction in its path. No sooner had the waters subsided than the French National Bureau of Waters and Forests got to work. Beginning part way up the slope, they built several great stone dams across the path of the landslide to hold in check the continued descent of loose shale and rock carried by the torrents, and as each waterfall, thus created, began to dangerously undermine the foundation of the dam, a series of lower intermediate barrages had to be added. Only then was the first real headway won and opportunity given to pave a sort of permanent stream bed through the great piles of silt below. Huge four-foot blocks of stone set on end were used for

the purpose. All this, however, was simply in the nature of preliminary work to make it safe to get at the sources



ONE OF THE BENEFITS OF AFFORESTATION

The victory over the landslide has not only resulted in the saving of many lives and much property, but has made possible extensive hydro-electric developments. This electric cog railway up among the peaks leads to a new resort from which may be had one of the finest views in all the Pyrenees.

of trouble, the continually eroding sides of the scar. There are found in all high mountain regions several varieties of extremely tough rooted grass. The mountain climber soon learns to know that a good hand grip on a tuft of this growth is sufficient to lift him even over a dangerous ledge. Accordingly, the Department of Waters and Forests figured that if this grass could be dug up and transplanted in rows or cordons across the dangerous spots, the surface soil might be temporarily fixed. Their expectations were well justified. To be sure, any

great volume of material from above would sweep this weak defense along with it, but fortunately only a few such accidents occurred. A large supply of tough rooted



WHERE DEVASTATION REIGNED SUPREME

First was the bare and ugly slide—then cordons of grass supplemented and held by birch and alder, then Nature's gradual healing and finishing of the protective work. Up above, where the shifting snows gather for a tremendous rush into the valley, the young trees serve as a natural break.



tree and bush seedlings were also gathered to strengthen the cordons.

Whenever a given spot of soil and rock had been thus temporarily anchored, there began the hazardous occupation of tree planting. Seldom has the planting of trees been carried on under such unfavorable circumstances. Sometimes man and seedlings were lowered from above on a rope ladder, or a human chain so well known to Alpine climbers; was organized. It was indeed a testimonial to the grit of the French laborers that the work was ever accomplished at all. The species of trees used were chosen not upon the basis of any future commercial value of the wood, but primarily for rapidity of growth, and ability to send out a mass of tough interlacing roots. The foresters took lessons from Nature, selecting those trees which are most often found naturally sprouting upon land slide scars; and just as in this

accommodation was swept away by the spring slides. Once, even, a whole gang of men who had been sent a little too early to the scene of action lost their lives. As the zone of operations progressed to the higher levels, it was impossible for the men to go to and from their work, but they lived in shacks upon the edge of the scar, and subsisted on supplies brought in, either by mountain pony or upon their own backs.

Gradually, the work progressed to the very upper levels, and the fight became directed not against water erosion and loose earth, but against the snow itself, which is the beginning of all trouble. Numberless little stone benches were erected with a sort of hollow behind them, while on either side, large clumps of spruce, mountain pine, larch and other sub-Alpine species were introduced. This work began at an elevation of some two thousand feet above the valley, and was continued to the highest levels where a timber line could be established.

The really serious problem came in getting seedlings properly acclimated to the high altitude. Those grown in nurseries in the lower valleys were found to be too far progressed in the spring season for introduction to the rigorous climate



BEFORE AND AFTER

Two views taken of the same spot; the first taken in 1887, and the second in 1921. Note how the larch and spruce have almost completely won back the dangerous as well as valueless waste.



BEATEN AT LAST

The forest has grown up to cover nearly the whole of the giant scar and insure against a repetition of the disaster. The planted forest has won out, and is now rapidly growing into a valuable stand of timber.

country the willow, birch and alder became favorites. Later, when these had fulfilled their purpose and overcome the danger from slides, more valuable species could be introduced. In fact, all the cutting on steep mountain slopes in France is regulated on the selective system to discourage the growth of inordinately large specimens. Half a dozen medium-sized trees close together are a much more effective protection for the soil than a single forest giant. During the winter, all operations were suspended, but time after time the little stone hut the men had built for their summer

above. A scheme had to be devised to winter the seedlings part way up, or to artificially retard them. The best results were obtained by a combination of these methods, and transplanting the year before their permanent use, to high altitude nurseries near the scene of operations. Every spring there were found to be heavy casualties in the planting of the summer before, while nearly all the young trees pointed their branches toward the valley in the position to which they had been dragged by the relentless snow. But, in spite of handicaps, the work progressed, and today a healthy forest of many acres crowns the former danger zone.

Very little had to be done to the mud delta at the bottom



Once the slides were stopped, Nature promptly reclaimed it, and at one point a forest of spruce, now eight to ten inches in diameter, covers the former devastation. Four or five million francs have been expended by the government in all, and although the work has cost lives as well as money, it has not only resulted in the saving of many lives and much property, but has made possible extensive hydro-electric developments throughout the valley. In place of terrific floods alternating with dry stream beds, a fairly even flow of water, unsupplemented by reservoirs, now furnishes light and power for the town. With further control of the mountain torrents, the development is soon to be extended and not only the



AN INNOCENT STREAM BUT IT MAY BECOME A RAGING TORRENT

The construction of a succession of tiny barrages prevents the destructive work of the spring floods which were formerly responsible for heavy losses of earlier plantings.

branch railroad to Luchon but also the main line from Marseilles to Biarritz across the entire southern portion of France will be electrified. The benefits of afforestation in the high mountains are felt, too, in another way, in that the upper grassy meadows, so rich in food for cattle and sheep, are made safe for large scale exploitation. The Chief of the Department of Waters and Forests for this district has made a special study of mountain grasses, and his department is doing a great service to the farmers of France. The time is coming when forestry in America, too, will be enabled to play an even larger part in the development of our country, and it is more than likely that our present Congress will be enabled to pass a forestry bill which will be the first step.

## AN APPRECIATION OF DR. ROTHROCK

The resignation of Dr. J. T. Rothrock as a member of the Pennsylvania State Forest Commission has been followed by numerous tributes to his great achievements in forestry and the gratifying results of his devotion to the cause.

Governor Sproul, of Pennsylvania, in accepting the resignation wrote:

"Knowing your great interest in the subject and in the Department, which is largely the result of your own far-sighted policies and devoted service, I can but appreciate that the reasons which have actuated you in your decision to retire from the Commission are imperative and compelling.

"Under the circumstances, therefore, I shall accept your resignation, but I beg you to accept my congratulations upon the great service which you have rendered the Commonwealth during your long and useful life.

"Trusting that you may be spared for many years in good health and contentment, I am, with sincere regards."

The members of the State Forest Commission passed resolutions upon Dr. Rothrock's retirement which said:

"Resolved, that the Pennsylvania State Forest Commission, although knowing well that Dr. Rothrock long ago earned a just reward of peace and quiet found in the calmer sphere of home life, is yet affected with a deep sense of regret and sorrow because of his retirement from public service. His real service in the cause of forest conservation is shown by his devotion to forestry for almost half a century. His vision and courage led him to become an earnest advocate, when others ridiculed, belittled, remained silent, or retreated. His unbounded enthusiasm, his prophetic vision, his keen intellect, his unquestionable integrity, and his open heart are responsible for much of the progress that forestry has made.

Resolved, that the establishment of the Pennsylvania Department of Forestry and most of its accomplishments are directly attributed to the prophetic vision, sound judgment, untiring labors, and generous heart of Dr. Joseph Trimble Rothrock—It was he who laid the foundation of the Department and fashioned the framework of the present superstructure. He leaves to his successors and to the Commonwealth a heritage of service and devotion that is beyond our power to estimate adequately and appreciate fully. Endless benefits will flow forth from his life of public service, and faces that have not seen him will bless him. His life of public service will stand as a worthy example to the youth of our land. His achievements are comparable only to the man himself—upright citizen, unselfish public servant, distinguished botanist, prominent physician, brave soldier, fearless explorer, Father of Pennsylvania Forestry, cultured gentleman, faithful counsellor, loved and devoted friend."



# FOREST RECREATION DEPARTMENT

Arthur H. Carhart, Editor

## To the Green Tree Fraternity

VACATION time is coming! The smudgy buds on the street trees, the birds, in spite of their grimy dress soiled by the smoke of the city, tell of it,—it is in the air. The technical diagnostician might say that these are spring fever symptoms, but all know that it is the call to the open places beginning to exert itself and that it

not. The rushing babble of the brook where it gurgles over the stony stream-bed, the swish of the truant breeze through the bushes and grasses, the smashing roar of the thunder god are our true mother tongue. The thousands and thousands of years our ancestors spent in the open have come to us in the call of the outdoors as a

There is a tendency to think of outdoor beauty as being present only where nature is undisturbed. There has grown up a widespread cult imbued with the idea that we should "leave Nature alone." It is founded no doubt on the practices of the past, for forests were stripped from the slopes, unsightly scars wrought by industry, and beauty dissipated.

But forestry need not be excluded from our great play places to insure natural beauty. All will agree that a sturdy young tree is more pleasant to behold than a rotting, over-mature veteran. Forestry utilizes the veterans and brings in young husky trees to fill their places.

This policy exists in National Forests. Their beauty is unsurpassed—and commercial cutting is allowed in them. Proper restrictions are necessary and rational conservation policies must be followed to bring this about, but it can be and is being done.

Their beauty calls to all lovers of the outdoors. They belong to the people. The recreational use is the only direct, universal, personal use we can make of them. They invite you to come to them for your vacation this year.—Editor.

will culminate in a trip into the hills, along a tree-bordered stream, or in automobile over the broad highways.

Mother Nature calls to her truant child, man. The shadowland, where tall, arched trees let little darts of sunshine through to dapple the forest floor, is a part of our being. Stone walls, steel girders, or tiled floors are

heritage. We must heed it. We return to nature to get inspiration, better health and relief from all of the ills that our artificial surroundings breed.

Right now many are looking forward to a vacation time in the open. Those who are not doing this of their own volition are subconsciously dreaming of places



IN THE SAWTOOTH

Timbered slopes, jagged peaks, clear lakes and big fish await the traveler in this National Forest in Idaho. Would you seek further for a better spot than this for your vacation camp? It is useless.



where the clean wind rushes over spacious prairies, or where it playfully tosses pine boughs and roars through deep canyons. To all comes the question of where to go.

Do you seek a camp in the wilds reached by pack trip, or is it a picnic in woody glen you will prefer? Are you already sniffing the smell of the crisp bacon as it sizzles over the fire in the morn? Does the smell of "coffee in the woods at dawn" carried on the breeze that fans your cheek come to your nostrils as you sit at your desk, or in your den? Does the tug of an imaginary trout make your hand suddenly grip the penholder and your eyes get filmy in retrospection of some fight with a game old rainbow or mackinaw?

Does your heart yearn for communion with broad lakes or high peaks? Are your feet itchy to scramble up the face of a cliff lying between you and the pinnacle which challenges you to the climb? Can you feel the press of the cool rock against your body where you cling to the surface for a brief moment of rest? Can you hear the rattle and see the jump of the rock dislodged by your feet as it bounds towards the bottom of the canyon?

The big woods are calling. Spring Fever is a polite excuse for not answering the call of your native heath—the woodlands. The spicy tang of the pine needles pervades the atmosphere and the clean air, a million miles big, waits to give you a lung full that is not laden with the grime of city winds. A hunger so strong that your mouth waters when

the out-of-doors. The swirl of the water below the rapids hides the form of a big one and the crack of a twig in the thicket means that your wild brothers are stealthily taking stock of prodigal man.

Campfires are dancing in the shadows of giant fir trees in this land of the clean outdoors. Pitchy smoke curls as incense to nature. Spruce-bough beds are there where your tired muscles can rest. Perky points of light that seem unbelievably near wink in the heavens and perhaps a luminous disc, the moon, lifts its lamp above the spire-like points of the pines. The open road is beckoning to all the outdoors' family. The greenery of God's woods holds forth a welcome and promise of shelter and rest.

The outdoors is in your blood. We all belong to the Green-Tree Fraternity through inheritance from our forbears and we answer the call. So while vacation time is still beckoning appealingly and has not come to "stare us in the face," American Forestry is offering an outline of "where to go in our National Forests." The editor of this section has collected brief statements from each of the Forest Service Districts where are many, many acres of outdoorlands—where all of your dreams of outdoor life may come true. From this list our reader can surely pick some appealing place to go for his stay in the open and then can write to the District headquarters of the particular forest he plans to visit to get more information on what that place has to offer the members of the Green-Tree Fraternity—the

## THE GREEN INN

By Theodosia Garrison

I sicken of men's company—

The crowded tavern's din,  
When all day long with oath and song  
Sit they who entrance win;  
So come I out from noise and rout  
To rest in God's Green Inn.

Here none may mock an empty purse  
Or ragged coat and poor,  
But Silence waits within the gates  
And Peace beside the door;  
The weary guest is welcomest,  
The richest pays no score.

The roof is high and arched and blue,  
The floor is spread with pine;  
On my four walls the sunlight falls  
In golden flecks and fine,  
And swift and fleet on noiseless feet  
The Four Winds bring me wine.

Upon my board they set their store—  
Great drinks mixed cunningly,  
Wherein the scent of furze is blent  
With odor of the sea.  
So from a cup I drink it up  
To thrill the veins of me.

It's I will sit in God's Green Inn,  
Unvexed by man or ghost,  
Yet ever fed and comforted,  
Companioned by mine host  
And watched at night by that white light  
High swung from coast to coast.

Oh, you who in the House of Strife,  
Quarrel and game and sin,  
Come out and see what cheer may be  
For starveling souls and thin  
Who come at last from drought and fast  
To sit in God's Green Inn.

(Reprinted.)

you just think of a spicy mulligan stew, awaits you in that steadily growing clan—the lovers of things outdoors.

## CURIOUS GLACIERS AND CRAGGY PEAKS

By K. D. Swan.

THE country of District One is extremely diversified, and one may find in all parts features of some interest to those seeking recreation. In the plains country of eastern Montana the timbered mesas of the Sioux and Custer Forests offer the vacation seeker shaded areas where he may picnic and camp. In south central Mon-



tana is the Beartooth Forest. Here one finds a jumble of rugged peaks, many of them snowcapped, and with glaciers on their sides. Here is located the famous Grasshopper glacier, where one may see imbedded in the ice myriads of grasshoppers imprisoned, no one knows how, in some prehistoric time. The Absaroka, Gallatin and Madison National Forests lie to the north and west of the Yellowstone National Park and within their borders are mountain peaks, canyons and streams unrivaled anywhere. The famous West Gallatin Canyon, lying on the road between Bozeman and the west entrance of Yellowstone Park, has become duly famous of late for the grandeur of its scenery.

The Helena, Deerlodge and Beaverhead Forests contain much to interest the tourist and vacationist. Within a short distance of Helena, Montana's capital, is much fascinating country. There are steep-sided canyons cut in the limestone formation, through which flow well-stocked streams. Perhaps no forest in the District is more frequented than the Deerlodge, for here the busy workers from Butte and Anaconda seek relaxation away from smelter and mine.

Farther north lies the wilderness of the Flathead, and Lewis and Clark forests, one of the few remaining unopened wildernesses of the country. Here is a little-known area of mountains and lakes, well forested, and abounding in game and fish, where one may travel for days, and forget the existence of towns and railroads. It is a territory frequented by hunters of big game in season. Northwest Montana is more heavily wooded than other parts of the State. Parts of the Cabinet, Kootenai and Blackfoot Forests are covered with yellow

pine, larch and fir timber. It is a region fairly accessible, and yet having much of the charm of primitive wildness. Good fishing streams are abundant, and many beautiful lakes are hidden in the heavy growth of timber.

Missoula may be likened to the hub of a wheel, from which radiate in all directions, spokes which lead into a realm of recreation. The famous Bitter Root valley, considered by many the most beautiful of the smaller valleys of America, lies surrounded by the Bitter Root National Forest. Along the west boundary is the rugged Bitter Root range, whose summit forms the Montana and Idaho State boundary. To the west of this range, on the Idaho side, are the Nezperce and Selway Forests, wildernesses which contain country as yet unpenetrated by civilization.

Farther to the north lie the Clearwater and St. Joe Forests, which, although heavily visited by forest fires, yet contain much of interest to the hunter and fisherman, and to those wishing to leave the main lines of travel. It is a rough, mountainous country which tends to be heavily timbered with white pine, fir and spruce.

North Idaho contains two lakes of surpassing beauty on National Forest land. Priest Lake on the Kaniksu Forest is a beautiful sheet of water set in the midst of a heavily timbered, mountain-walled valley. It is much sought by vacationists, and the Forest Service has here laid out cottage sites for lease. Pend Oreille Lake is a large body of water with well-wooded shores and numerous bays and islands.

Write to the District Forester at Missoula, Montana, for further information.



MOUNT HOOD AND LOST LAKE

Is a vacation in a place like this not worth a trip from Portland, Maine, to Portland, Oregon, or even farther? Best of all, we own these places and they are ours to enjoy.



## BY AUTO, RAIL, HORSE, FOOT OR CANOE

By H. N. Wheeler

**R**UGGED, white-capped mountain peaks, deep, rock-bound canyons, dashing waterfalls, lakes of deepest blue, perpetual fields of ice and snow, swift running streams where lie gamy trout, pine-clad hills, quiet, shady nooks, highly colored wild flowers and beautiful song birds attract to the fifteen National Forests in Colorado of District Two, each year thousands to the outdoor life they crave.

The Colorado, Pike and San Isabel National Forests along the front range are easily reached by train and by auto, but beyond these are other Forests where thousands of delightful spots beckon the traveler. The auto gypsy reaches many of these places, but pack trips on the San Juan, Uncompahgre, Battlement, Rio Grande, Cochetopa, Holy Cross, Gunnison, White River and Montezuma take one into real solitudes.

In the San Juan region of the Uncompahgre and San Juan Forests, tremendous peaks, spires and massive mountains of vari-colored rock stand out in bold relief, and attractive waterfalls dash down their rugged slopes.

The Leadville, containing the second highest peak in the United States, Routt and Arapaho Forests are partly accessible by auto or may be covered by pack outfit, but are best seen by those who travel on foot.

Five of the Forests in Wyoming are under the direction of District Two. The Hayden and Medicine Bow in the southern part, the Washakie and Shoshone in the northwest and the Bighorn in the north central part of the State with their extensive virgin forests, lakes and streams teeming with trout, lofty peaks and deep canyons lure the lover of the great outdoors.

The Black Hills of South Dakota, containing the Harney and Black Hills National Forests, is a beauty spot that acts as a lodestone for many a weary traveler seeking the cool of the mountain lands combined with the green of the pines and spruces. Here are unexplored

caves, beautiful mountain streams, picturesque lakes and even rugged rock pinnacles, all easily accessible to the automobilist.

The Michigan National Forest, partly in the upper and partly in the lower peninsula of the State, near the more densely populated portions of the middle west, draws thousands of visitors who find rest and quiet or a chance to fish and hunt.

Minnesota is blessed with two National Forests, the Minnesota and Superior. In the Minnesota National Forest, the Mississippi River. Cass, Winnibigoshish and many smaller lakes attract thousands of people each year

who come by auto or train to fish or bathe in their clear waters, or spend a few weeks in summer homes or in boys' or girls' camps. But the Superior National Forest, containing more than a million acres of timber, lakes and streams along the Canadian border, opposite the Quetico Forest Reserve of Canada, is truly the vacationists' paradise. A few miles from settlement and you come to a real wilderness where bear, deer and that monarch of all North American game animals, the bull moose, are frequently seen and beaver are so tame as to be easily photographed. Canoe trips, hundreds of miles in length, may be taken without once returning to civilization, and fish, lake trout, pickerel, wall-eyed pike and the mighty muskellunge are caught with little effort.

Nebraska National Forest, a broad stretch of never

ending sand hills, being converted by planting operations of the United States Forest Service, into a beautiful and valuable timber land, is unique and interesting.

From the Montezuma and San Juan in southwestern Colorado to the Shoshone on the north in Wyoming, embracing the whole stretch of the mighty Rockies, the Black Hills of South Dakota, the sand hills of Nebraska and those gems in northern Minnesota and Michigan are lands belonging to the people of the United States. They are valuable for their economic uses, but they are

### Riding the Tide

Gee! but it's great to be footloose and free again;  
Far from the din and the turmoil and grind;  
Seeing the things I've been wanting to see again;  
Finding the peace I've been hoping to find!  
Wearing the duds I've been wanting to wear again;  
Doing the things I've been yearning to do;  
Knowing no worry or trouble or care again—  
Riding the tide in a birch bark canoe!

Sweet to my ears is the dip of the oars again,  
As through the waters I gladsomely skip;  
Great to be here in God's world—the outdoors, again,  
Feeling the zest and the sparkle and zip!  
Smelling the perfume of balsam and pine again;  
Knowing the old thrill of living anew;  
Draining the cup of the joys that are mine again—  
Riding the tide in a birch bark canoe!

Gee! but it's great to know pleasures like these again;  
Far from the struggle and bustle and strife;  
Feeling the tingling whip of the breeze again;  
Drinking deep gulps of the ozone of life!  
Here in the land of content, and *real* joy again,  
Underneath skies that are smilingly blue;  
Youth has come back—I'm a light-hearted boy again—  
Riding the tide in a birch bark canoe!

—JAMES EDWARD HUNGERFORD.





CRAGS AND A LAKE OF THE MEDICINE BOW

High at timberline nestle lakes of much beauty encircled by veteran trees. Wyoming's Forests are some of the most striking national playgrounds easily reached over auto and rail highways.



STEEL HIGHWAYS TIE EAST TO WEST

The great transcontinental rail systems bring the population of the Atlantic Seaboard quickly to their playlands of the West. Here a vista of haze-touched peaks would greet the traveler from Pullman window.

also the playgrounds of those seeking health, rest and re-creation of mind, body and soul. The Forests of District Two welcome you. They are yours for play and enjoyment.

For further information, write the District Forester, Denver Colorado.

### "A FRIEND TO MAN"

*The author of "The House by the Side of the Road" was an enthusiastic traveler, says "The Federation" recently. On one of his trips through New England, he came across a little, unpainted house set almost in the road, at the top of a long hill. An oddly shaped sign post finger pointed to a well-worn path, and a sign read, "Come in and have a cool drink." Following the path, he found at some distance from the house a spring of ice-cold water into which a barrel had been sunk. Above it hung an old-fashioned gourd dipper. On a bench was a basket of fragrant apples, with the sign, "Help yourself."*

*Returning to the house, he found a childless old couple in poverty, whose only support was the rocky farm. Too poor to give money, and desiring to help others in some way, they had resolved to share their cool water and abundant fruit with the travelers by the way; and so, from the ripening of the first plums to the harvesting of the last apples, a basket of fruit was kept at hand for any who might come up the long hill.*

*The beautiful spirit of ministry revealed in this old couple so impressed Foss that he conceived the poem here printed, in which that spirit is portrayed and glorified.*

#### THE HOUSE BY THE SIDE OF THE ROAD

There are hermit souls that live withdrawn  
In the peace of their self-content;  
There are souls, like stars, that dwell apart  
In a fellowless firmament.  
There are pioneer souls that blaze their paths  
Where the highways never ran—  
But let me live by the side of the road  
And be a friend to man.

Let me live in a house by the side of the road,  
Where the race of men go by—  
The men who are good and the men who are bad,  
As good and as bad as I.  
I would not sit in the scorner's seat,  
Or hurl the cynic's ban—  
Let me live in a house by the side of the road  
And be a friend to man.

I see from my house by the side of the road,  
By the side of the highway of life,  
The men who press with the ardor of hope,  
The men who faint with strife;  
But I turn not away from their smiles or their tears—  
Both parts of an infinite plan—  
Let me live in a house by the side of the road  
And be a friend to man.

I know there are brook-gladdened meadows ahead,  
And the mountains of wearisome height;  
And the road passes on through the long afternoon,  
And stretches away to the night.  
But still I rejoice when the travelers rejoice,  
And weep with the strangers that moan,  
Nor live in my house by the side of the road  
Like a man who dwells alone.

Let me live in my house by the side of the road,  
Where the race of men go by—  
They are good, they are bad, they are weak, they are strong,  
Wise, foolish—so am I.  
Then why should I sit in the scorner's seat  
Or hurl the cynic's ban?  
Let me live in my house by the side of the road  
And be a friend to man.

—SAM WALTER FOSS.



## SUNSHINE PLAYLAND

By Joseph C. Kircher

**S**UMMER mountain playgrounds, winters on the desert, ruined cities of prehistoric man, romance of early Spanish explorations, picturesque Indian Pueblos, quaint Mexican Placitas, and with all, sunshine everywhere all the time—this is the great Southwest—Arizona and New Mexico, in District Three.

Here, more than 1,000 years ago, flourished an Indian civilization whose ruins are found in nearly all of the Southwestern National Forests, although they are most

Persons who desire the backwoods, will find an ideal country in the Mogollon Mountains on the Gila National Forest in west central New Mexico and the White Mountains on the Apache Forest in Arizona—a wonderful mountain country with high peaks, deep canyons and ridges well timbered with pine and spruce, interspersed with mountain meadows. The streams abound with trout while deer and wild turkeys frequent the timbered hills and grassy meadows.

Opportunities for summer vacations among mountain scenes and yet in comfort are offered by the hotels and summer camps on the Pecos River, Santa Fe Forest, as well as at Cloudcroft, on the Lincoln Forest (both in New



SUNSHINE AND SHADOW ON THE TRAIL

Canyons and ridges, well timbered with pine and spruce. Deer and wild turkeys frequent these hills. Apache National Forest, Arizona.

numerous on the Carson and Santa Fe Forests in Northern New Mexico. The largest and most interesting of these are the communal houses and cliff dwellings of the Rito de los Frijoles and the adjacent Pajarito Plateau, within the Bandelier National Monument.

With Santa Fe as a center, and lying largely within the Santa Fe National Forest, is the most interesting 50 mile square in the whole United States. Here, in addition to the prehistoric ruins, are many of the present day Indian Pueblos and it is in this region that the Spanish conquistadores established their headquarters early in the sixteenth century. Here also are mountains with lofty peaks, unexcelled scenery and clear trout streams. And everywhere, whether in mountain or desert, there are blue skies and wonderful sunsets.



WHERE LIVED THOSE WE HAVE SUCCEEDED

Bandelier National Monument—Santa Fe National Forest, New Mexico—Ruins of Ancient Cliff Dwellers restored by the New Mexico Archaeological Society in cooperation with the United States Forest Service.



Mexico). In northern Arizona the region about Flagstaff, on the Coconino and Tusayan Forests also has delightfully cool summers.

Portions of the Tonto and Coronado Forests of southern Arizona, because of their comparatively low elevations, have mild winter climates suitable for persons who desire winter outings among the picturesque semi-arid mountains. Within the Tonto Forest lies the famous Roosevelt Dam forming a lake some 20 miles long

from which the Salt River valley secures its irrigation water.

The recreational development of the southwestern Forests has not been as rapid as that in other parts of the west and this unique country is little known. A trip into it, however, will reveal a world of interesting things found only in this great land of sunshine. Write to the District Forester, Albuquerque, New Mexico, for more complete information.

## GRAND TETON TO GRAND CANYON

By James E. Scott

FROM the lofty Tetons of Wyoming south to the Kiabab Plateau and the Grand Canyon—from the eastern boundary of Utah west into Central Nevada, in District Four, a new vacation land is steadily winning recognition among the great out-door attractions of the West. Recreation seekers to the number of 200,000 last summer found all that they sought in the Intermountain

Nature than that land of forests, lakes, and mountain streams which lies at their feet.

Central Idaho and the Sawtooth,—for many years known, appreciated and loved by those hardier ones who would not wait for highways, and now that the auto roads are reaching into the heart of the region, calling increasing thousands from all parts of the country to share its boundless variety of summer pleasures.

There are still those who like to leave the beaten paths and with pack outfits seek out the less accessible and often the most interesting sections. For these a trip along the upper South Fork of the Payette River, clear to its source and the source of other rushing rivers across the great Payette Game Preserve, into that jumble of lordly Sawtooth peaks and emerald lakes, will surely measure up to every anticipation.

Logan Canyon and Bear Lake.—Forty miles of scenic



IN JACKSON HOLE

Jenny Lake, in the Teton National Forest, is one of the scenic gems which have made this section famous. It is easily accessible by rail and stage or by auto.

National Forests. They'll be back this year with many more.

Jackson's Hole and Grand Teton—surely no one can say he has "done" the West without a trip into the "Hole," where the romance and thrill of the early West still lingers—where the great herds of elk make their winter quarters and where each summer day may be devoted to a different phase of real outdoor enjoyment. No range in America excels in rugged grandeur the Teton Peaks. No region could be more enticing to the camper, hunter, fisherman, or lover of the beautiful in



CLIMBING MT. TIMPANOGOS, WASATCH NATIONAL FOREST

This party plodding to the top of the craggy peak are in surroundings belying the fact that it is July. Many people visiting our National Forest playgrounds of the West will for the first time tread on snow during the middle of summer.



beauty well describes the beautiful drive over the new Logan Canyon road, through the Cache Forest in northern Utah, and for good measure, at the end of the drive, Bear Lake. Unusually beautiful in its setting, with ideal beaches and camp sites, fine fishing and boating, this lake is rapidly winning its place in the hearts of those who travel.

Mount Timpanogos,—bearing the only remnant in Utah of the great alpine glaciers of the Ice Age, is one of the many features which brought nearly 50,000 visitors to the Wasatch Forest last season. The city of Salt Lake, the smaller cities of Provo, American Fork, Lehi and others nearby are uniting with the Forest Service in making accessible the recreational resources of the Wasatch Forest and stimulating their use. Community camps, organized climbs to the summit of "Old Tim," a newly discovered and truly wondrous cave in American Fork Canyon, pack trips into the back country, and other features are of more than ordinary interest.

On south, we come to Fishlake, in the National Forest of that name, its bed 9,000 feet above sea level, seven miles long, two wide, exceedingly deep, and abounding in native and imported varieties of trout. Many steel-head and mackinaw are taken here weighing from 12 to 20 pounds.

Bryce Canyon, on the edge of the Sevier Forest, and Zion Canyon have in the past few years won rapid recognition. Bryce Canyon is a scenic gem, presenting to the eye a marvelously beautiful array of towers, spires, minarets, fortresses and cathedrals in every color of the rainbow.

The Kaibab Plateau, with its wonderful body of yellow pine timber, its vast herds of protected deer, and the Kaibab squirrel, found nowhere else, constitutes an outdoor attraction which is certainly a fitting approach to the Grand Canyon of the Colorado, which bounds it on the south.

And here we are—all the way from the Tetons to the Canyon where we must stop because the editor says so, and not a word has been said of the Uintas, of the Natural Bridges, and Cliff Dwellings of the La Sal in Utah, of Lamoille Canyon and the Rubies, Lehman Cave, or Mt. Wheeler, in Nevada, Big Springs or the Big Falls of the Snake on the Targhee Forest, the Salmon River Gorge, the Thunder Mountain country, Payette Lakes, or a hundred others of which much might be said. But blame the editor for this and come this summer and look them up. The District Forester, Forest Service, Ogden Utah, will gladly answer inquiries and the Service organization in the Intermountain District will do all it can to make your visit a pleasant one.

## THE CALL OF CALIFORNIA'S FORESTS

By L. A. Barrett

THE National Forests of California in District Five furnish a wide range of recreational possibilities to the tourist, camper, hunter or fisherman. Much of California's famed beauty is within them. East of San

Diego, in the Cleveland National Forest and easily accessible by good roads, is the Laguna Mountains recreation area. Adjacent to Los Angeles is the Angeles National Forest, a very popular region for summer homes



A RECREATION CENTER IN THE INYO

Here is a picture of a camp where some of the several million people who last year visited the National Forests for recreation found their recreation objective.



A LAKE IN A CALIFORNIA FOREST, THE STANISLAUS

Vacation time in the Forests is paradise time for the youngsters. All the secrets of the woodland are theirs to explore. Here they get an education never found in text books.



and for hiking trips. Northwest of this lies the Santa Barbara National Forest. The Monterey Division of this Forest is a particularly good deer hunting region.

The Sequoia and Sierra National Forests cover the southern portion of the Sierra Nevada Mountains and are an ideal region for packing trips, as well as supplying the best of fishing. They are mountain play areas of unsurpassed charm.

Along the east side of the Sierras, between beautiful Lake Tahoe and Owens Lake, lie the Mono and Inyo National Forests. This is one of the most noted mountaineering sections of the State and is renowned for excellent fishing.

Just north of Yosemite Valley and adjacent to the old "mother lode" mining country of Bret Harte, is the Stanislaus National Forest, a delightful region for recreation of all kinds and very popular for summer homes.

To the north of this lie the Eldorado and Tahoe National Forests, which surround Lake Tahoe, the most popular mountain lake region in the West. Here, snuggled in depths of giant forests, little lakes shimmer from pine-scented breezes and spire-like peaks stand as sentinels inviting travelers to this outdoor playground. Lying north of the Tahoe country, in the Plumas National Forest, is the Feather River country. Here

was once the home of Mark Twain, the beloved portrayer of the West. Now it is a popular fishing and resort region.

North of this and surrounding Mount Lassen is the Lassen National Forest, a region of interesting natural phenomena, and a good hunting country. Lassen is the only active volcano in continental United States.

In the northeastern corner of the State lies the Modoc National Forest, home of the big mule deer. To the west lies Mount Shasta, and the Shasta National Forest, brooded over by the crystal whiteness of the peak. It is a favorite mountaineering and fishing region.

The Klamath National Forest in the northwestern corner of California is still some of the true old West, but with the opening of the Klamath River road, now under construction, it will soon be accessible to motorists.

South of this lies the Trinity National Forest, a fine fishing and hunting region, and on south of here in the California National Forest is found some of the best deer-hunting country in California.

For further information relative to the recreational advantages of this wonderful region of mountains and lakes, streams and forests, write the District Forester, Forest Service, Ferry Building, San Francisco, California.

## CAVES, CRAGS AND TRAILS

By John D. Guthrie

DENSE forests, live glaciers, snowy peaks, many lakes and good fishing greet the traveler in the National Forests of the Pacific Northwest in District Six. By motor, railroad, pack outfit, or afoot, he may reach some, if not all, of these attractions in whatever National Forest he may enter. In Oregon he may ride or hike northward along the Cascades' crest from Crater Lake to Mount Hood over the Oregon Skyline wonder-trail. This trip alone passes through six different National Forests—the Crater, Umpqua, Deschutes, Santiam, Cascade and Oregon. At the end of the trail is Eagle Creek Forest Camp, the last word in forest campgrounds, located just off the world renowned Columbia River Highway and 44 miles east of Portland.

The Oregon Caves, "the Marble Halls of Oregon," as Joaquin Miller loved to call them, are in the Sis-

kiyou Forest in southern Oregon, and are reached over a new Forest Service road. One may take a pack outfit in northern Oregon and go into the little Switzerland of the Northwest, the alpine lake country of the Wallowa and Whitman Forests, in the Wallowa and the Blue Mountains country. He will find turquoise lakes literally and truly teeming with trout, waiting, yes eager, to be caught.

Crossing the lordly Columbia River into the State of Washington, the tourist enters other wonderlands. The Columbia Forest with Mounts Adams and St. Helens, with Spirit Lake at its base; then the Rainier National Forest with the "Mountain that was God" looking down upon him; then the Snoqualmie Forest with its famous Sunset highway piercing it east and west; then the Washington Forest, with its high, rugged peaks, its manifold



SNOW-CAPPED ST. HELENS AND SPIRIT LAKE

Beauty of forest and peak reach a climax in the play places you own in the National Forests. Here in the Columbia National Forest you can find many places to satisfy your longing for beauty in the outdoors.



glaciers, its mountain goats, its truly alpine scenery—a region to be seen thoroughly only by the experienced mountaineer.

Going west, across the Sound, one may enter a vacation kingdom all its own, the Olympic Forest, with its



MT. BAKER FROM CHAIN LAKE

Lakes, streams and the beauty peaks of the Forests of Oregon and Washington are some of the scenic treasure belonging to you and inviting you to plan your vacation for this season so you may visit your Forests.

crowning glory in old Mount Olympus. Here, nestling at its base, are the jewel lakes, Quinault, Crescent and Cushman. Or going east from Seattle the traveler will come to Lake Chelan, that Norwegian fjord in its inland setting of towering mountains, or the Wenatchee Forest with its lakes: Kaches, Keechelus and Cle Elum. Still further east is a country as yet unknown to the tourist, the Colville Forest, where a pack outfit must be one's motor car, Pullman and diner.

Throughout the twenty-two National Forests of the North Pacific District the tourist will find 425 forest camps set aside and ready for his use. Eagle Creek, along the Columbia highway, with its tables, benches, stoves, piped water, comfort station, autos and consequent crowds—the acme of forest camps—to Twin Lakes Forest camp on the Washington Forest, the newest, which he can reach only via horseback and where he must rough it, but amid heaven-kissing peaks, all await the traveler. Surely, amid such an array of vacation delights the most fastidious may find something to

please him, or the real mountaineer may find his heart's delight, beside some crystal lake set high in the mountain meadow, jewel-flowered, with only the trees, the mountains and the stars for companions. Mountain climbers may add new laurels to their sweating brows, for here are Diamond Peak, The Sisters, Jefferson, Hood, Adams, St. Helens, Rainier, Olympus, Glacier Peak, Baker, Stuart and North Star—all with living glaciers, and all well worth the effort of a climb. Nowhere else within the United States can the tourist find such glaciers as to number, size, beauty and interest. Fishing? It is here. Here is where the fish equal to those in the stories may be found. Do you hunt with a camera? Eighteen out of the 22 National Forests have elk; four have mountain goats; three mountain sheep—and as for



ON THE OREGON SKYLINE TRAIL

Spread beneath your feet, as you went your way over this trail through Oregon's scenic mountains, lies a world of loveliness. Lakes and timbered ridges vie with the appeal of high peaks for your attention.

deer, both mule and white tail, they're here. If you have not seen this part of your America it is high time that you did.

Write to the District Forester at Portland, Oregon, for literature.



## FROM MAINE TO FLORIDA

By Thomas H. Gill

**E**ASILY accessible to our massed population of the Atlantic Coast lie the National Forests of the East in District Seven. These, from a recreational standpoint, present a quite different situation than is found in the West. The Western Forests were carved, for the most part, out of undeveloped public domain. The Eastern Forests are being built up piece by piece, as a mosaic is laid. Economic development coming prior to the establishing of these forests has resulted in a situation where resort and summer home sites are already in private ownership and the recreational function of the forests of the East consists in providing tributary playgrounds, picnic and camping grounds for tourist, automobilist, fisherman and hunter.

Since nearly four-fifths of the total population of the United States live in close proximity to the eastern National Forests, the question of distributing the greatest good to the greatest number resolves itself into holding open to the public every available campsite, every spot of scenic beauty, and in making them accessible to all the people.

Happily, the eastern vacationist has the length of the United States from which to choose, for the mountains of the Atlantic seaboard are dotted with the forests from Maine to Florida.

Northmost of all is the White Mountain National Forest lying within New Hampshire and Maine and embracing the rugged

slopes of the Presidential Range. Here is a land of unalloyed hearts desire to the lover of the outdoors. Among its landmarks of beauty are The Lakes of the Clouds, located 5,000 feet above the sea; Snow Arch, King's Ravine, and that great natural curiosity, "The Old Man of the Mountains," Carter Notch, with its twin lakes surrounded by high cliffs and alpine vegetation, contains one of the stone huts where the mountain climber finds shelter and food. Within the boundaries of the forest are many ponds and streams well stocked with speckled trout, where at evening, white tail deer come silently to drink.

North and south of Asheville, North Carolina, stretches the Pisgah Forest traversed by the Pisgah auto road. Here the tourist may motor to within a mile of the summit of Mt. Pisgah, leave his car on Government parking ground, climb to the top and lunch at the hotel on Pisgah Ridge.

In Arkansas the Ozark Forest offers its highways and byways—further west lies the Wichita Forest with its buffalo herd and its scenic highway. To fishing enthusiasts or lovers of water sports the Florida National Forest, close to Camp Walton, affords many interesting trips. So whether you wish to spend January on Skis or in a bathing suit, whether you wish to cast a fly for speckled trout or troll for tarpon, you can find your pet outdoor enjoyment somewhere in our Eastern National Forests.



A BEAUTY SPOT OF AN EASTERN FOREST

Rugged canyon walls, as interesting as any in the Rockies, thrust up from this splendid water feature, the Tallulah Falls of the Shenandoah National Forest of Georgia.

## ALASKA--THE ALLURING

By John D. Guthrie

**A** SEA trip with a scenic panorama unmatched anywhere awaits the summer tourist visiting National Forests of Alaska. Leaving Seattle, Washington, or Vancouver, or Prince Rupert, B. C., you can take a comfortable ocean steamer and start on a trip through the

"inside passage" where slopes of eternal greenness delight the eye. Here and there are waterfalls to break the curtain of green, and above all, snow-capped mountains piercing the very heavens. Southeast Alaska is a series of countless green islands, separated by innumerable



waterways. Thriving towns, salmon canning plants, logging operations, wireless towers, whaling stations, marble quarries, living glaciers, totem poles, perennially snow-capped peaks, dense forest-covered slopes and shore lines—these are characteristic of the Tongass National Forest of southeast Alaska.

Ketchikan, the metropolis of southern Alaska, is first reached. Here are located the headquarters of the Tongass National Forest. Going on north Juneau is reached, the territorial capital, and here also are the District Forester's headquarters for the Alaska District. Near Juneau are the large mining operations of Treadwell and Thane.

Passing through the panhandle country of southeastern Alaska, from your steamer chair you can see the age-old ice masses breaking off into the ocean, while above and around you rise peaks to thousands of feet. Totem poles, the clan records of a fast-passing race, gleam out from forested points as the steamer threads its way through the hundreds of miles of channels, straits, and natural canals of the Tongass Forest.

Although not on the regular stops for main steamers, roadhouses are found along this road, and scenery that

The panhandle of southeast Alaska is practically all included within a National Forest, and here is beginning the construction of pulp mills to convert some of its enormous timber resource into newspaper print. The forest rangers here cover their districts and handle their forest business in 30-foot gasoline launches, instead of the more picturesque saddle horse or the more prosaic flivver of the National Forest areas of the States.

If you wish a longer sea trip then go farther westward to the Kenai Peninsula and the Cook Inlet country, where the Chugach National Forest is located. Starting out from Cordova, the headquarters of the Chugach Forest, you will see more glaciers, even more stupendous mountain masses rising before you, even more sublime scenery. Here you may see from a comfortable railway car, (on the Copper River Railroad), living glaciers and as sublime scenery as there is in all America, or all the world—that along the Copper River.

If you want an even longer trip take the railroad out of Cordova to Chitina, and from there take a car over the Richardson Trail, (they call it a trail) 320 miles to Fairbanks, a 3-day trip, in the interior. Comfortable

you will remember as long as you live. From Fairbanks you may come out to the Coast again over the line of the recently completed Government railroad, 560 miles, to Seward, passing through the wonderful Kenai Peninsula, the big game region of America today. Or, wishing an even longer trip, you may take a river steamer from Fairbanks on down the mighty Yukon river, to St. Michael, and to Nome, and back by ocean-going steamers, through the Behring Straits to Seattle or to Vancouver, British Columbia. All these trips are



**A DOCK FULL OF WHALE OIL**  
Industries of Alaska are as interesting to the visitor as are some of the other features. This is at the Whaling Station at Port Armstrong.

it will be worth your while to make arrangements to see Sitka, the place of all Alaska with a historical and romantic background. For here was the old Russian capital, and here yet are Russian churches and houses, and many landmarks of the old Russian occupation before Secretary of State William H. Seward, back in 1867 bought all this country from Russia for some two cents per acre.



**ACRES OF ICE RIVER**

The Mendenhall Glacier, within 11 miles of Juneau and reachable over a good auto road is a lodestone for travelers reaching this point.





THE DOCKS AT CORDOVA



A FOREST-BORDERED STRAIT

Water surfaces of great extent are ruled over by massive mountains. Alaska and her forest lands call to all outdoor lovers.

This view from an ocean-going steamer tells of the inviting outlooks to be had from such craft skirting the Alaska coast.

regular ones; the railway and steamship companies, both American and Canadian, will furnish you with particu-

lars and schedules and rates. You have not seen America until you have seen Alaska.

**This is all yours. Why not this year visit your National Forests and enjoy their beauties?**

Those who read this magazine are interested in the economic side of forestry. It is there in the National Forest areas. It is possible to enjoy all of the beauty of the playlands here briefly sketched and at the same time see forestry in practice. Play and timber production go hand in hand in the National Forests of our country and your vacation time may be educational as well as recreational if your next vacation is in these properties of yours.

Make your next vacation a Forest Tour—in your own expansive forest lands.—Arthur H. Carhart.

## THE END OF THE STAGE COACH DAYS

By Earl H. Emmons

Well, at last the railroad found' us,  
And it looks plumb strange and queer,  
Where the bronco and the buckboard  
Held the trail for forty year;  
And I reckon I'm a foggy  
And back-numbered in my ways,  
But I hate to see the passin'  
Of the good old stage-coach days.

For I used to play the ribbons  
In the days of Eighty-one,  
And it makes me sick a thinkin'  
That the final stage has run,  
But I see the old coach busted,  
With its nags turned out to graze  
And I know that it's the finish  
Of the good old stage-coach days.

There was music in the rattle  
Of the busted winder-panes  
And the clatter of the hosses  
As they surged against the reins,  
And the creakin' of the leather  
And the screechin' of the stays,  
But the music all is over  
With the dyin' stage-coach days.

Yes, it all is past and over,  
And it causes me a pain,  
For there ain't no thrills or romance  
Just a settin' in a train;  
But the world goes by unheedin'  
While the brave old coach decays;  
And the nags and me stand thinkin'  
Of the good old stage-coach days.



# EDITORIAL

## YOUR NATIONAL FORESTS

**Y**OU, Mr. American Citizen, are a stockholder in one of the greatest forest properties in the world—the National Forests of the United States. Your stock certificate is your citizenship. The National Forests are owned by the public. They are administered by the Forest Service, United States Department of Agriculture for your benefit and for the benefit of your children and your children's children. They are a God-given heritage of the American people, created by nature working through uncountable years. They have been saved from private greed and despoilation by the courage of wise men. Once destroyed, nature only can rebuild them.

In view of the proposal of a few men to oust, by process of political law, the National Forests from the Department of Agriculture and into the Department of the Interior, it is well that you, as a citizen stockholder, consider what sort of a property you have and how it is being developed under the stewardship of the Forest Service. There are, in all, 149 National Forests, embracing in the aggregate 156,666,045 acres, of which two million acres are in the east and the remainder are in the west. They are for the most part wooded and mountainous tracts, ranging in area from a few hundred thousand to over a million acres each. In the west they embrace the high watersheds of practically all the important rivers which flow westward to the Pacific Ocean and eastward to the Mississippi River; in the east they form portions of the watersheds of the twenty-three important rivers which drain eastward to the Atlantic Ocean or westward to the Mississippi River.

They are, first and foremost, forest lands, dedicated to the continuous production of timber for the people of the United States and to the protection of the nation's water supply. The present market value of their timber and land is over a billion dollars. Their real and potential value is many times that amount because included in their assets is the value of their water for agriculture, navigation, water power and municipal purposes; the value of their forage crop for the production of meat; the value of their rivers, forests and mountains for game and recreation; and the value of their roads, trails, cabins and other permanent improvements, constructed in the course of the business development of the properties. That development, under the stewardship of the Forest Service, has sought to make these National Forests of greatest use and productiveness in perpetuity just as fast as economic conditions permit.

What of their timber assets? They contain 563 billion feet of standing timber, or twenty-five per cent of the remaining timber in the United States. All told the National Forests embrace seventeen per cent of all forest growing land in the United States. In addition to the many millions of acres containing forests of merchantable size, there are twenty million acres bearing young growing forests which are being protected against fire and other forms of devastation so that they will produce timber crops in the years ahead. Much of the timber on the National Forests is now inaccessible, but as local development proceeds, the merchantable stands are made

available, subject to cutting regulations which will assure continuous growth.

An idea of the development which is taking place in the timber administration of the forests is indicated by the fact that during 1920, 805 million feet were cut by 13,272 purchasers. This is a volume increase of more than 400 per cent over 1907. Investments made by purchasers for logging and manufacturing National Forest timber amount to \$40,000,000, and include 1000 permanent mills employing 30,000 wage earners. These are commercial operations which turn into the treasury of the United States about two million dollars annually. In addition, 25,000,000 feet are sold at cost of administration to some 6,000 settlers and farmers every year and over 35,000 people annually are granted free permits for small amounts of timber for their own local use. The present cut of timber from the National Forests, however, amounts to only about one-seventh of what the forests are capable of supplying on a sustained yield basis. As economic development makes the forests more accessible and as timber on private lands becomes more and more exhausted, full utilization of National Forest timber will return the people of the United States—even at present stumpage rates—a yearly revenue of \$14,000,000.

What are these Forests worth as conservators of water? Their potential value is incalculable today, the irrigated lands of the west represent an area of 13,200,000 acres, embracing 150,000 farms and producing annual crops worth \$247,000,000. Of the water used in irrigating these lands, 85 per cent originates in the National Forests. The water supply for twenty-two major irrigation projects of the Reclamation Service comes from watersheds protected by National Forests. In its sales of timber the Forest Service restricts its methods of cutting to those which will not injure the protective value of the forest cover. Apart from the water used for agriculture, 732 western cities, representing an aggregate population of 2,265,000 people, depend upon National Forest watersheds for their municipal water supply. So important is this service of the Forests that many of the municipalities have entered into cooperative agreements with the Forest Service for protection of their watersheds from fire and pollution.

Added to the foregoing, is the value of the waterpower on the National Forests. Thirty-one per cent of all waterpower in this country is on sites within these Forests, while a large part of the remaining power, although on sites outside the National Forests, is dependent upon water arising in them. The western mountains contain 72 per cent of our total potential water power and of this, 42 per cent is in the western Forests. This power is being rapidly developed. The Forest Service has in force 174 power transmission lines and 197 power projects, with minimum discharge capacity of 899,000 horsepower. During 1921 the Federal Power Commission, under the Water Power Act of 1920, received application for 124 sites within or partly within National Forest boundaries and aggregating the development of over



three million horsepower. Twelve of these were for power projects to be developed in connection with pulp and paper manufacture in Alaska. The total potential waterpower resources of the National Forests are estimated at a minimum of 8,497,000 horsepower and at a maximum of 16,874,000 horsepower.

As a result of systematized regulation by the Forest Service, the forage crop of the National Forest is now returning an annual income to the Federal treasury of close to \$2,500,000. By a system of range allotments under which nominal grazing fees are charged, the Forest Service has brought the National Forest ranges under practical and profitable administration which protects their productivity, stabilizes the stock industry and promotes the agricultural development of the country. Over 38,000 stockmen use the Forest ranges under paid permits and graze a total of almost 10,000,000 head of adult live stock. This amounts to 25 per cent of the live stock industry of the western states. In addition, local settlers are permitted to graze, free of charge, over 100,000 work and milch animals on the Forests. These are animals used on the ranches and farms.

The value of the National Forests for recreation is increasing by leaps and bounds. Already some six million people visit the Forests annually to camp, fish, hunt, hike, motor or rest. These forest tourists come from all parts of the United States. It has been estimated that, based upon present recreational use only, the National Forests represent a value of five cents an acre per year, or a total recreational value to the American people of

nearly \$10,000,000 a year. And the recreational use of these Forests today represents possibly less than one per cent of their total potential use. The rapid increase in the number of people deriving pleasure from the Forests is due in large part to their recreational development by the Forest Service. Over a thousand campgrounds have been set apart and posted and recreational permits have been issued for over 6,000 summer homes, cabins, hotels and club houses.

Values thus far considered are those arising from the work of nature and as applicable to the use of the people of the nation. The development of property so immense and so diversifiably valuable naturally has entailed man-made investments. In order to transact the business of the National Forests and to protect them from fire, 27,844 miles of trails, 27,000 miles of telephone lines, 1,184 miles of stock driveways and 7,700 miles of roads have been constructed at a total cost of \$25,833,000. Approximately \$5,000,000 more have been invested in other needed improvements such as fire breaks, lookout towers, ranger stations, camp grounds, bridges, fences, water development, forest nurseries, etc. Approximately 100,000 acres have been successfully reforested by planting trees. They represent a large potential value.

All this, and much more, are your National Forests. They are an empire of growing wealth. In area, they are greater than the combined acreage of forest land in Germany, France, Switzerland, Norway, Sweden, Belgium, Spain and the United Kingdom of Great Britain. As a public property, are they not worthy of your watchful appreciation?

## FORESTRY IN TEXAS

**P**ARTICIPATION of lumbermen, as evidenced by their representation at the recent meeting of the Texas Forestry Association, is an outstanding feature of the present forestry situation in the Lone Star State. It will be remembered that at the last session of the Texas legislature, forestry legislation was the subject of a vigorous contest which served to set the lumbermen apart as opponents of certain features of the association's program. The main issue was a state severance tax as applied to forests. This the lumbermen fought with great aggressiveness on the grounds that it was class legislation. While the bill failed to become a law, the contest was close and brought out a surprisingly strong and widespread public sentiment for definite forestry legislation. This sentiment, coming from many unexpected sources, seems to have aroused the lumbermen to the growing need for action.

In any event, a larger number of lumbermen than ever before attended the recent meeting of the State Forestry Association and took an active interest in the deliberations. Differences were adjusted and a constructive program framed, to which the lumbermen pledged their support. While those who had advocated a severance license tax, dropped the proposal in the interest of harmony and a solidly supported program. The recommendations adopted, if put into action, will mark a definite step forward. Among the measures proposed are the purchase by the state of cut-over lands for state forests and game sanctuaries, adjusted taxation of lands devoted

to the growing of timber, greater encouragement in the reforestation of land chiefly valuable for forest crops, by the establishment of demonstration areas and other needs, more effective fire control and broader co-operation with the Federal Government. Although the former opposition of the lumbermen has been removed, the fact that the association's program will have to be financed by direct appropriations or the issuance of bonds by the state in lieu of a severance license tax calls for nothing short of the lumbermen's aggressive support.

A long range view of the situation indicates that the lumbermen of Texas have been given an unusual opportunity to join forces with other interested organizations in an active and constructive effort to give the state the kind of a forest policy it needs. Certainly, the urgency of the situation is apparent. With an original stand of virgin pine timber covering 14,000,000 acres, only 2,000,000 acres remain uncut. This is being cut at the rate of 200,000 acres a year, so that the exhaustion of the state's virgin pine is placed at ten years hence. In the meantime the state's need for timber is increasing and the prediction is made that within a very few years Texas will pass from a lumber exporting to a lumber importing state. Indeed, it is a question if this change has not already taken place. The present yearly lumber cut of the state is slightly less than one and one-half billion feet, while a recent estimate from the state forester's office places the annual consumption of wood by the state at almost two billion feet.



If the industries of Texas are alive to their own future welfare, they will lend vigorous support to a policy which proposes to put the cut-over lands of the state to work producing timber. There are in Texas approximately six million acres of cut-over forest land, of which two million acres contain young growth. The remaining four million acres are practically unproductive but

could be reforested naturally if given adequate protection from fire. In the whole state the present annual growth of saw timber is only 170,000,000 feet, while the oil industry of Texas alone uses almost double that amount of wood annually. Loss of economic independence, so far as a local supply of wood is concerned, is close at hand for the industries of Texas.

## TENNESSEE MAKES FORESTRY EDUCATION COMPULSORY

TENNESSEE has joined the ranks of progressive states in putting forestry in the public schools. Indeed, the south seems to have taken the lead in this direction, both Louisiana and Tennessee now having laws requiring the teaching of forestry to the children of their schools. Although many state organizations are doing admirable work in the general promotion and encouragement of forestry education in the public schools and several states have laws providing for the teaching of fire prevention, the new law in Tennessee goes much further. It makes it compulsory for every public school in the state to give a course in forestry and plant life. The scope of the law is largely expressed in Section 1 of the Act, which reads as follows:

"Be it enacted by the General Assembly of the State of Tennessee, that the curriculum of every public school in this state shall include a study of forestry and plant life which shall be taught therein and which study shall include the names and varieties of trees grown in the state, their age of maturity, their value to the soil, to animals and birds, and when possible or practical the children of

such schools be given an object lesson in study of forestry by one or more visits during each semi-annual session to some conveniently located forests and there instructed and taught by their respective teachers or some competent person selected for such purpose."

The act further provides that each pupil, unless excused by the teacher, shall be required to write at least one short story or essay on forestry during the year. Tennessee is to be complimented for its recognition of the importance of forestry. In Europe, children appreciate the value of forests and the need of forestry. They develop what has been termed a "forestry sense" early in life because forest culture is a part of their community environment. That will come in America in time and the children of today, who acquire a true appreciation of forests, will be not only better citizens tomorrow but they will be better able to meet the important forest problems with which this country must cope during the next twenty-five years. The progressive example set by Tennessee may well be emulated by many other states.

## FORESTRY AND THE REDWOODS

IF plans now being considered by a number of strong lumber companies in California mature, permanent forest management for a large portion of the redwood region will be assured. One of the largest of the redwood companies—the Union Lumber Company—has already definitely decided to handle its redwood lands on a plan of continuous timber production and it is now establishing a forest nursery for the production of planting stock for its cut over lands. Five other large companies are investigating the possibilities of applying permanent forest management to their properties. These six companies represent more than 50 per cent of the redwood production.

This movement should be of nation-wide interest because it carries with it not only assurances of a permanent supply of redwood—a wonderfully adaptive wood—but more than that, the perpetuation of vast stretches of redwood forests. The destruction of these forests, limited in range and of world-wide interest, has brought forth much public protest. They are indeed the wonder forests of the nation and the destruction of them wrought by lumbering is a sickening sight. But they represent huge investments by their owners who assert they cannot afford to donate them to the public or hold them as exhibition forests. The public, on the other hand, has thus far not been able financially to buy them at a fair appraisal. Permanent forest management, therefore, offers one solution to the situation and while it will not fully meet the views of those who desire to see the redwoods left in their virgin state, it will at least provide per-

manently, growing redwood forests in the redwood range. That will be a great step forward.

The redwoods are limited to approximately a million and a half acres along the northwest coast of California. Some 400,000 acres have already been cut over. The remaining stand is estimated at about 50 billion feet, or close to an average of 60,000 feet to the acre. It is not uncommon, however, for some areas to yield a cut of over 100,000 feet to the acre and on rich bottom lands as high as 200,000 feet. Individual acres will exceed that figure considerably. For example, there is record of one acre from which over one million feet of logs was cut.

In many respects redwood lends itself to forest management. It is one of the most rapidly growing trees in the United States. On average quality soil it will produce about 40,000 feet to the acre in 50 years. The wood is suitable for many different uses and it holds out great possibilities for the recovery of valuable by-products from both its thick bark and from the wood waste resulting from lumbering. Although the young trees are damaged by fire, the other growth is very fire resistant. Regeneration of cut over lands, however, cannot be left wholly to nature. Only about twenty per cent of the cut-over area will be forested naturally by sprouts from redwood stumps. The remainder of the area must be reforested artificially, in order to get satisfactory stocking.

If the plans now in the making are carried out and the redwood properties put under real forest management, the redwood lumbermen will thereby gain nation wide approbation—an asset of no small moment.



## FIFTY YEARS OF ARBOR DAYS

**C**AN your town look ahead fifty years? What if a row of trees had been planted for you when you were born? What would they be like now? Supposing your town fifty years ago had started a town forest as is being done by so many places today. That forest would be a regular source of income now. Many towns of Europe do this and have done so for centuries. Take town beautification plans for example. Suppose they had been started fifty years ago? Would not their streets be attractive with trees and parkways?

The point to this is, that the year 1922 is the semi-centennial of the founding of Arbor Day in this country. In the state of Nebraska the first Arbor Day was inaugurated by the State Board of Agriculture on January 4, 1872, when a resolution by J. Sterling Morton setting

ciation show J. Sterling Morton to have been long identified with the organization. His son, Joy Morton, of Chicago, is also interested in trees and recently gave a four-hundred acre estate west of that city for an arboretum.

Some of the pioneers mentioned in the call by the American Forestry Association to schools, women's clubs, civic societies, chambers of commerce and patriotic organizations to mark the anniversary are Morton, Fernow, Rothrock, Loring, Roth, Trelease, Higley, Northrup, Henry S. Drinker, Charles Sprague Sargent and a host of others. These men preached forestry when to be a "tree enthusiast" was to be a "crank." They were in the same category with those persons who worked for women's suffrage, prohibition, believed in flying ma-



AMERICAN LEGION TREE PLANTING IN CHICAGO

John J. Little, Jr., commander of the Theodore Roosevelt Post, American Legion, holding the first of two hundred memorial trees planted at the entrance to the Speedway Hospital. Judge Kenesaw Mountain Landis shoveling in the earth.

"Wednesday, the tenth of April, 1872 for tree planting in the state of Nebraska" was adopted. In that year more than a million trees were planted in what was known as the "treeless state." In 1885 the state legislature changed the date to April 22 in honor of Mr. Morton's birthday.

This year is also the semi-centennial of the establishing of the Arnold Arboretum at Harvard and the fortieth anniversary of the organization of the American Forestry Association for in 1882 the Association was started at Cincinnati with George E. Loring, of Salem, Massachusetts, as first president. The files of the Asso-

chines and jokingly referred to automobiles as "horseless carriages." To get a perspective on how long ago it was when we had the first Arbor Day we must remember that it was four years before the centennial at Philadelphia, where the telephone was a "contraption," a sort of side show proposition.

In Nebraska the people have planted seven hundred thousand acres and as long ago as 1895 the legislature of that state proudly proclaimed by resolution that Nebraska shall henceforth be known as "The Tree Planter's State." Following the lead of Nebraska, Tennessee and



Kansas set Arbor Days in 1875. Then there was a lapse until 1882, when Ohio and North Dakota decided to have tree planting days. In Ohio the celebration was during the sessions of the convention in Cincinnati, which resulted in the forming of what is now the American Forestry Association. Warren Higley, of the Ohio Forestry Commission, suggested to John B. Peaslee, the superintendent of schools, that the school children have a part in the celebration. This resulted in a parade of twenty thousand school children through the streets to Eden Park, where trees were planted in honor of famous men. The following year at St. Paul B. G. Northrup, of Connecticut, introduced a resolution calling on every state to set aside a tree-planting day. In 1896 Spain adopted the idea and Hawaii took it up in 1905.

The day after the Armistice was signed the American Forestry Association began its campaign for memorial tree planting. The tree is the memorial

simply three things for its report:—for whom the tree is planted, the date of planting and the organization doing the planting, and in return the Association sends out certificates of registration for which there is no charge, and files the report on its national honor roll.

This memorial tree planting has taken on many phases. For instance, at Pasadena, California, which calls her memorial trees her "Hall of Fame," trees have been planted for some of California's great students of nature. In Washington the John Burroughs Clubs, under the direction of Mrs. John D. Patten, have planted a "Hall of Fame"—Red oaks for Burroughs, Muir, Thoreau, Whitman and Emerson. Theodore Roosevelt, assistant secretary of the navy, who as a boy knew Burroughs, placed the tree for the naturalist and Dr. F. W. Ballou, head of the Washington schools, took part in the program on the grounds of the Lincoln Memorial.

Heister Dean Guie reports that one thousand Ameri-



TREE PLANTING AT A COLLEGE

The students of the University of Maine, Orono, Maine, planted memorial trees and the attention which was given to the ceremony is indicated by the large crowd photographed on the college campus.

offering of the individual. He can plant a tree without waiting for a planning commission or an act of a city council. The trees are now being planted both in memory of the man who gave his life to his country and in honor of the man who offered his life when his country called. The idea put forth by the Association has grown from the effort of the individual to the effort of the municipality and even of the state. From a single tree planting by a school or a church, of which the Association has recorded thousands, we now have memorial parks and Roads of Remembrance. Motor Highway Associations everywhere have taken up the plan of tree-lined roads. Whatever form of memorial a municipality decides upon the Association urges that memorial be given the proper setting of memorial trees planted by the individuals of the community. The Association is registering these trees on a national honor roll. It requires

can elms bordering the Tacoma-Seattle High Line Highway were dedicated to Washington's World War soldier dead January 14 on the road a short distance from Seattle. The elms, four year-olds and from eight to twelve feet in height, planted by the Seattle Garden Club at intervals of 80 feet on both sides of the highway, extend for eight miles from the city's southern limits.

Lieut. Gov. W. J. Coyle, a veteran of the recent conflict, presided over the dedication exercises. Attending and participating were a score of notables, including Mrs. Alexander F. McEwan, president of the Seattle Garden Club, who conceived the idea of planting the highway trees. Gold star mothers were present, and representatives of the Seattle American Legion Posts, the Veterans of Foreign Wars, and the Disabled Veterans paid tribute to their fallen comrades. By next Armistice Day the



Garden Club plans to have 1,600 more elms established along the highway as far as the Pierce County line. Tacoma is expected to finish planting the remaining 13 miles. When the project is completed, the two Puget Sound sister cities will be linked by a Memorial Way 33 miles long, a noble Road of Remembrance that will keep ever fresh the valorous devotion of those whose heroism it perpetuates.

In Dallas, Texas, Forester Gilliam is doing a great work in arousing the city to tree planting. A school plants a tree for a former pupil as for example the University of Washington, at Seattle, which has named many for her former students. A church can plant a memorial row, a class plants trees, one for each of its members



PART OF A LARGE TREE PLANTING

The Business Men's League of Helena, Arkansas, planted trees on nearly all the streets of that town, in order to form municipal roads of remembrance. Miss Mary Yaeger, daughter of the Mayor of the city, holding the tree.

on the college campus. Twenty years later it can hold a reunion there. Atlanta writers plant trees in honor of famous men and women. A child is born and a tree is planted in its name. Tree planting has long been the practice of foreign visitors when in another country. The Prince of Wales placed many when he visited here. Pershing placed memorial trees in France as did Foch when in the United States. These trees are all being recorded by the American Forestry Association in its Hall of Fame for Trees with a history. This idea has brought hundreds of nominations of trees marking historic spots throughout the country. There is no activity to which tree planting does not lend itself. In no other way can a community be brought more closely together than by community tree planting.

The Garden Club of Seattle has planted thousands



Wide World Photo.

#### TREE PLANTED FOR JOHN MUIR

Mr. H. Fairfield Osborn, President of the Museum of Natural History, New York, planting a tree in memory of John Muir, the famous naturalist, at the main entrance of that institution.



#### THE GOVERNOR'S TREE

Every governor of Indiana plants a tree on the capital grounds soon after taking office. Here is former Governor James P. Goodrich planting his tree.





ONE OF A THOUSAND ELMS PLANTED NEAR SEATTLE

These elms were dedicated to the soldier dead of the state of Washington, being planted along eight miles of road near Seattle. On next Armistice Day sixteen hundred more elms will be planted and Tacoma is expected to plant the remaining thirteen miles of road and thus, before many years have passed, the two cities will be linked by a beautiful green "Memorial Way."

of trees along a Road of Remembrance. On a smaller scale perhaps any organization can do the same thing and it is an assured fact that any municipality that has forward looking men and women, can have a memorial park which all its citizens can enjoy. That is what Charlotte, Michigan, did and many other towns are doing. The Roads of Remembrance plan is making for better intra-community spirit everywhere.

The American Forestry Association wants all to celebrate this year. This tree-planting is part of its educational campaign to bring to the people the importance of forestry and increases interest in the perpetuation of our forests. The State of Michigan is almost denuded of its pine. The state imports lumber to keep her factories going. Dr. Filibert Roth, of the University of Michigan, shows how the population in many counties has fallen off as the forests have vanished. Dr. Herman von Schrenk, of St. Louis, declares the same thing with regard to the southern half of Mis-

souri. It is the same story in Pennsylvania and in many other states.

We are just awakening to the possibilities of tree planting. The trees are monuments with a meaning for they live gloriously just as did those for whom they are planted. The glory is the thing to tell the world. Our sorrow is a private, personal affair and needs no telling in bronze or stone. Instead let us plant trees to tell of their glory, for that is the way they who went forth to the great adventure would have it. Plant the tree with an appropriate ceremony. The American Forestry Association will send a tree-day program and suggestions on what to plant to anyone who asks for it. Here is a semi-centennial in which everybody can take part. Organize schools and your community for in no other way can the community spirit be brought out as by tree planting. Can your town look ahead? It is not so long when you look back fifty years, so take that look forward and plant trees now.

**Register Your Memorial Trees In the National Honor Roll of the  
American Forestry Association.**



# BIRDS AND FLOWERS OF EARLY SUMMER

By Dr. R. W. Shufeldt, C. M. Z. S., etc.

(PHOTOGRAPHS BY THE AUTHOR)

**R**ECKONING by the conventional rule of dividing the year into four seasons, we have come to consider March, April, and May the spring months. This, however, is a matter of latitude, in so far as our country is concerned; for, if we take March as an example, we know that in Maine it is characterized by all that pertains to winter, while in Florida the month of March resembles the early summer of the Middle Atlantic States—and

built their homes and reared their broods—at least those that do build nests; yet many of them still present the livery of their spring plumage unworn—particularly the males; while not a few, during the time we have in mind, start in to rear a second family, or even a third, as is the case in some species.

Then, few people are aware that we have one bird that puts off the time of mating and housekeeping until the latter part of June, and the bird in question is our common, but very beautiful Cedar bird or Waxwing—a species that students of American ornithology and many others know at a glance. Years ago, I had several of them alive for nearly a month, during which time I was successful in my efforts to obtain photographs of them, two of which are here reproduced. Many are unfamiliar with the reason why these lovely birds are called Waxwings; it is because a row of the wing-feathers upon either side are tipped with tiny, longish bits of some ma



AN OLD MALE CEDAR BIRD

Fig. 1.—This specimen shows the complete row of wax appendages on the wings, but no terminal ones on the tail feathers. The crest is depressed.

there you are. So, early summer in any part of the country is usually held to be a transitional season, with everything in nature, the weather included, partaking of what one expects late in the spring upon the one hand, and the first warm days of summer upon the other. In any event, it is one of the most charming seasons of the year—especially appealing to all lovers of the out-of-doors and all that nature holds for them in the open.

To be sure, the spring migrants among the birds have



A PAIR OF CEDAR BIRDS

Fig. 2.—These birds are shown on a branch of Sweet Gum, the one with its back toward the observer being the male. Note the beautiful black and velvety feathers surrounding the eyes.



terial resembling red sealing wax. Specimens are occasionally met with wherein similar bits are to be found on the ends of one or more of the tail feathers, generally on several of them; but it is exceedingly rare to find a specimen where all of the tail-feathers are so ornamented.

In the Bohemian Waxwing of the northern parts of this country, the Cedar bird has a close relative; the form is considerably larger, though very similar to its more diminutive cousin in other respects, such as plumage and the tips of wax. I never saw this species alive in nature but once, and that was a specimen I collected at Fort Fetterman, Wyoming, fully forty years ago. It is said they occur in great flocks in northern United States and throughout many parts of Canada, and that they have the same habits as the Cedar bird, which is likewise often met with in flocks of a hundred and fifty or more; indeed, in New England, I have seen flocks composed of at least three hundred individuals. They are very silent at all times, possessing only a few low notes of a peculiar *t-ze, t-ze* character and never anything approaching a song. Then, too, they are noted for their brave defence of their young when these are in danger, although they seem to care but little when their eggs are in danger of being taken.

Foresters and agriculturists generally should know that this species is one of the best friends they have, in that it preys upon several species of insects that are injurious to a great variety of trees—those of the forest as well as orchard varieties, especially apple and pear.

Shortly after they leave the nest, young Cedar birds have a curious way of standing together on a twig or some small branch, stretching out their necks to the limit; and in this attitude they will remain as im-

movable as statuettes for a considerable time, or until the old ones approach with food. A single bird so posed was photographed by me some years ago, and it is here reproduced in Figure 3.

Some birds may breed in early summer for the reason that their first nest was destroyed in some way, containing either their eggs or their young. I once found the

nest and eggs of our Ruby-throated Humming-bird early in June, and I shall always believe that some misfortune had overtaken their first attempt to rear the two fledglings that constitute the family in that wonderful assemblage of bird-forms. All the "Hummers" lay but two eggs to the clutch, and these are invariably pure white and of an ellipsoidal form. Nests of several species of our Humming-birds are here shown in Figure 4, and few things in nature are more beautiful or interesting. The majority of our North American Humming-birds construct nests much after the form seen in the illustration—little, cup-shaped affairs, frequently overlaid with bits of moss or lichen, pasted on by the builder through the use of its own glutinous saliva. As to the body of the nest itself, it is usually constructed of some cottony material obtained by the bird from various species of plants and trees. Some six or seven hundred species of these little gems of the bird world have been described by ornithologists; they are entirely confined to the Americas and to some of the off-lying islands of the West Indies. Some of the tropical hummers build



A YOUNG CEDAR BIRD

Fig. 3.—This very unusual picture shows the nestling at the time it leaves the nest. It will stand on its perch in the quaint attitude here shown for upwards of half an hour.

very remarkable nests, and many of these are figured in a work on Humming-birds, published a number of years ago by our distinguished ornithologist, Mr. Robert Ridgway.

The Ruby-throat is easily reared as a pet, and some time ago I found a single young one in a nest that had been built in an oak in a piece of woods in southern



Connecticut. Upon taking it home, I experienced no trouble in getting it to drink water from a teaspoon, the former having been well sweetened with sugar. When being fed it would sit on one of my fingers, while I held the spoon with the other hand. At night it slept on the chandelier in the middle of the room, and the first thing in the morning it would fly down to a little glass vessel containing sweetened water which I had taught it to find. Later in the day it would fly out of an open window to visit the flowers of the red honeysuckle that grew luxuriantly over the broad porchway of our home. On one occasion, with a loud and rapid twittering, it flew into the room through the open window closely followed by a fine male bird of its own species—my captive being of the opposite sex; but it was not long after that when my pet responded to the "call of the wild" and flew away never to return.

Some of our Vireos build very beautiful and compact nests, more or less overlaid with material obtained by the builders from various plants and trees. A fairly good hand at this is our White-eyed Vireo, an example of which is given in Figure 5. I came across this nest in a hedge-way separating two fields, not far beyond the immediate environs of Washington. I simply tipped it down a bit, so as to show better the four little lovely eggs it contained, while my camera did the rest. Of course the owners of the nest were both present, and protested strongly against everything that I did, flipping, in their anxiety, from bush to bush close to their treasured home. I obtained all I needed in less than ten minutes' time.

whereupon I took my departure. The vireos were evidently much relieved, and apparently labored under the impression that their scolding had frightened me off—particularly as I had not disturbed the nest or stolen the eggs it contained.

Even the old-fashioned, rough-and-ready nest that our Song-sparrow builds has a charm for us, as in the first place it usually fills in our minds what constitutes a bird's nest; while, on the other hand, its builder, the first thing in the spring and all through early summer treats us to its most winning canto of rippling notes as it sits perched on some woodpile or rail-fence post down in the meadow.

Personally I have never taken the eggs from any bird's nest for a scientific or other purpose without experiencing a sense of having committed something bordering upon an unworthy act; and I shall never forget the intensely disagreeable sensation that took possession of me upon one occasion, when visiting a friend, and the latter's son came into the room holding his cap in his hands, in which were to be seen at least fifty eggs of the catbird, which he had collected in the neighborhood. I did not hesitate to express my opinion upon what such a wholesale robbery meant to the birds, and the loss it occasioned among the songsters of the future—not to mention the value of the species along certain economic lines.

That ventriloquist of the woodland brakes, our Yellow-breasted Chat, is another bird that constructs a rough-and-ready nest, such as is here shown in Figure 7. Once I came across one of these that had been built among the smaller twigs of a dogwood, not far above the ground. It



NESTS OF HUMMING-BIRDS

Fig. 4.—Humming-birds, so far as known, lay but two white, ellipsoidal eggs to the clutch, while no two species build their nests exactly alike. More than 500 species have been described, and some of them build truly wonderful homes.





NEST AND EGGS OF WHITE-EYED VIREO

Fig. 5.—In our bird fauna we have some 25 different forms of Vireos, and they all construct very dainty, not to say curious nests. The rim is attached to the forked twig selected by the bird, and thus it is suspended like a little open purse.

contained but two young, and I succeeded in getting a very good picture of it, which is reproduced in Figure 7. The two nestlings were just about to quit their home, and would, in a little while, be entirely able to take care of themselves. Alexander Wilson, in his *American Ornithology*, gave us altogether the best description of the notes of the Yellow-breasted Chat that has ever been committed to paper; I feel sure the reader will be glad to peruse the paragraph he left us, especially as the work of that famous writer and lover of birds is rarely in the hands of the average student of ornithology of today. So Wilson puts it this way when writing about this Yellow-breasted Chat of ours, and his description almost makes us hear and see the bird: "When he has once taken up his residence in a favorite situation, which is almost always in close thickets of hazel, brambles, vines and thick underwood, he becomes very jealous of his possessions, and seems offended at the least intrusion, scolding every passenger as soon as they come within view, in a great variety of odd and uncouth monosyllables, which it is difficult to describe, but which may be readily imitated, so as to deceive the bird himself, and draw him after you for half a quarter of a mile at a time, as I have sometimes amused myself in doing, and frequently without once seeing him. On these occasions, his responses are constant and rapid, strongly expressive of anger and anxiety, and while the bird itself remains unseen, the voice shifts from place to place, among the bushes, as if it proceeded from a spirit. First is heard a repetition of short notes, the whistling of the wings of a Duck or Teal, beginning

loud and rapid, and falling lower and slower, till they end in detached notes; then a succession of others, something like the barking of young puppies, is followed by a variety of hollow, guttural sounds, each eight or ten times repeated, more like those proceeding from the throat of a quadruped than that of a bird; which are succeeded by others not unlike the mewing of a cat, but considerably hoarser. All these are uttered with great vehemence, in such different keys, and with such peculiar modulations of voice, as sometimes to seem at a considerable distance, and instantly as if just beside you; now on this hand, now on that; so that, from these manoeuvres of ventriloquism, you are utterly at a loss to ascertain from what particular spot or quarter they proceed. If the weather be mild and serene, with clear moonlight, he continues gabbling in the same strange dialect, with very little intermission, during the whole night, as if disputing with his own echoes; but probably with a design of inciting the passing females to his retreat; for, when the season is further advanced, they are seldom heard during the night." Further on Wilson says that "while the female of the Chat is sitting, the cries of the male are



NEST OF THE SONG SPARROW

Fig. 6.—Most of our sparrows build a nest more or less like the one here shown; often the clutch of four eggs is heavily speckled, usually with some shade of brown.



still more loud and incessant. When once aware that you have seen him, he is less solicitous to conceal himself, and will sometimes mount up into the air, almost perpendicularly, to the height of thirty or forty feet, with his legs hanging; descending as he rose by repeated jerks, as if highly irritated, or, as is vulgarly said, 'dancing mad.' All this noise and gesticulation we must attribute to his extreme affection for his mate and young."

This account of Wilson's of the curious performances of the Yellow-breasted Chat reminds me of the description I gave along similar lines of the Mocking-bird, prepared at the request of the late Alfred Newton, F. R. S., which he published in his "Dictionary of Birds" (p. 584). In closing my description of that famous species, I said that "he is, as every student of nature knows, one of the most extraordinary songsters of the entire world's avifauna. As an imitator of the songs or cries of every other species of bird he has ever listened to, the Mocking-bird probably stands without a rival in the entire class; but in addition to this power, he possesses native notes of great purity, strength, energy and sweetness. To some degree, these latter resemble the notes of the Brown Thrasher, *Harporhynchus rufus*, but are of greater variety and far richer.

"For thorough appreciation, one should catch him upon a dewy morning just as the sun rises, and he flits to the top of some low tree to pour forth his medley of carols in soul-felt welcoming. This may be in some quarter of the sunny South, perhaps near the manor-house of some



THE YELLOW-BREASTED CHAT

Fig. 7.—These little fellows can already fly a short distance; their plumage at this stage is an olive green, which to some degree is protective.



HEAD OF QUEEN ANNE'S LACE

Fig. 8.—A well-known plant, introduced from the Old World, and now flourishing all over the Eastern States; wherever it is found it is the bugbear of the farmer.

broad plantation, where he can not only imitate any individual of the host of native songsters about him, but vary the strain with any of those familiar sounds heard about the house and barnyard. To see that little feathered being so brimful of ecstasy, replete with action and animation, drooping his wings, spreading his tail, so buoyant as hardly to be able to retain his perch, while the air is actually filled with his inimitable musical performances, is a sight not likely to be forgotten. Clearly, and with the greatest possible accuracy and rapidity, and with a mellow strength even exceeding the originals, he utters the notes and calls of twenty or more birds in succession, ranging all the way from the plaintive air of the Bluebird to the harsh, discordant cries of Jays, Sparrow-hawks, and even, with equal compass, the vociferations of an Eagle. Catching breath, and tossing himself lightly into the air above his perch, he alarms the entire feathered community assembled by his imitating the cries of a wounded birdling in the talons of a Hawk; this is followed perhaps by the crowing of a Cock or the



vociferous note of the Whip-poor-will, and the very incongruity appears to put his feathered listeners to shame at the hoax."

Passing from birds to some of the flowers we find in early summer, let us first glance at one of the most abundant and best known ones; I refer to the Wild Carrot, also known as Bird's Nest and Queen Anne's Lace.

This is a plant that often spreads over wide meadows and along dusty country roads, on both sides, for more miles than I would care to estimate. Neltje Blanchan introduces it in the following fashion when she says: "A pest to farmers, a joy to the flower-lover, and a welcome signal for refreshment to hosts of flies, beetles, bees and wasps, especially to the paper-nest builders, the sprangly wild carrot lifts its fringing foliage and exquisite lacy blossoms above the dry soil of three continents. From Europe it has come to spread its delicate wheels over our summer landscape, until whole fields are whitened by them east of the Mississippi." It may be—and probably is—a pest in the eyes of the farmer; yet the flower or flowers of this abundant plant are admired by nature lovers from one side of the continent to the other.

When reproduced the size of life, as it is here in Figure 8, few wild flowers indeed can excel it in delicate structure of the tiny flowers themselves, as they exist on the

plant and so well shown in my illustration. Now and then the Wild Carrot exhibits a single, central floret of a deep crimson shade, which is a very interesting fact. Then, too, as autumn comes on, the umbels of the flower-head become dry and dark, at the same time gradually curving upward towards the center. This forms, in time, a cup-shaped structure which, to the popular mind,

resembles the nest of some small bird; hence many call this Wild Carrot "Bird's nest." But why it should be called a "Wild Carrot" it is hard to say, as the plant is in no way related to any such species, and this has been proved over and over again by the plant cultivators of more countries than one.

As the woods warm up in early summer in certain of the Eastern and Middle States, there appears in the shadows of the trees a very beautiful blossom, of which I give a pretty illustration in Figure 10. Frequently it grows as a tall, loosely clustered panicle of rather conspicuous white flowers, each



THE CHICKWEEDS

Fig. 9.—During early spring and summer the pretty white flowers of this plant are sure to attract the attention of those passing them.

having a more or less sticky calyx. Its fringed, five-petaled flower is responsible for one of its popular names, as it is known as the Starry Campion. A pretty name; but what's in a name when this lovely flower is the cause of the death of scores of tiny insects that come in contact with its treacherous calices, all smeared over with their sticky exudation. Hence Campion is frequently known



as "Catchfly," although minute winged insects are by no means its sole class of victims, for the trap is equally dangerous to exploring ants. Indeed, the plant is fatal to more ants than to any of the winged forms, for the latter can alight direct on the harmless parts of the flower and thus avoid the danger, which the ant can not do. Neltje Blanchan, in commenting on this fact, says "An ant catching its feet on the miniature lime-twig, at first raises one foot after another and draws it through its mouth, hoping to rid it of the sticky stuff, but only with the result of gluing up its head and other parts of its body. In ten minutes all the pathetic struggles are ended. Let no one guilty of torturing flies to death on sticky paper condemn the *Silenes*!" *Silenes* for the reason that the scientific name for the Starry Campion is *Silene stellata*—it being a member of the Pink family; and it is not difficult to see a simple form of an average pink in its flower.

One of the first flowers to greet us in the spring and one that blooms along into early summer, is the dainty Giant or Great Chickweed—a fine example of which is shown in Figure 9. I collected this particular specimen in the environs of Washington, and it was flourishing in a shady angle formed by a big tree on one side and the trunk of a fallen beech on the other—an ideal spot for this species of plant, which we so frequently meet with in the recesses found next to the ground in nearly all of our forest trees. The soil is usually rich in such places, and the plant gets plenty of water from that which runs down the trunk during a heavy rainfall. One can not pass this species of Chickweed without noticing its pretty white flowers, so well shown in the accompanying illustration, set off by its dark green leaves and curiously branching stems. Sometimes the seeds of this plant find their way into some crotch of a tree, or into a hole formed by the loss of a limb—either being several feet above the ground. Then we have the pleasure of seeing a fine specimen of this species flourishing quite a distance up from terra firma, and often doing better than those on the ground. Once, in southern Maryland, I was passing through what was formerly a beautiful bit of forest, some twenty or more acres in extent. It had been burned over a few months before through the carelessness of a negro, who had set a pile of leaves on fire near a spring to "drive dem copperhead snakes away." It was a black and charred scene, but one little corner of it was brightened by a magnificent Giant Chickweed plant that was growing in the hollow of a broken-off tree-trunk some six feet above the ground. Its white flowers were made all the more conspicuous in the setting of the coal-black stump. These Chickweeds are also arrayed in the Pink family, along with the Starry Campion shown in Figure 9; and in this family we find, too, Bouncing Bet or Soapwort; the true Pinks; the Spurries; Pearl-wort; Corn-cockle, together with the wild species of Pinks.

This early summer season is a fine time for boys and girls to practice the taking of nature pictures with their cameras—not aimless snapshots, however, but well-considered subjects, properly timed and viewed from proper points. A good 5x7 view camera, armed with the best brand of films in use, is a serviceable instrument; but while I advise this kind of camera, it is only with the



CAMPION OR CATCHFLY

Fig. 10.—The sticky material on various parts of the flowers of this plant, which is classed with the pinks and their allies, causes the death of many visiting insects—especially ants.

thought that it probably is the best one for a beginner. Personally, I never use anything like it; on the other hand, I employ cameras of three different sizes, and arm them with instantaneous "dry plates." More than half the success in work of this kind is to select the correct point of view; to include all the desirable features on your ground-glass, and to use as small a stop as your subject will permit.



## THE WORK OF THE FORESTER

AT a meeting of the board of directors of the American Forestry Association, held in New York on April 12, the work of the forester of the association was discussed and plans outlined for the remainder of the year. Ovid M. Butler, the association's new forester, submitted a report which was approved by the directors and which will form the general plan of his work during the summer and fall. This plan contemplates more or less concentration by the forester upon specific situations.

Mr. Butler pointed out in his report that in view of the many diversified fields inviting the activities of the forester for the association, he felt that most effective results could be accomplished by following a definite plan with definite objectives and departing from that plan only when urgent situations arise. Otherwise, he held, the time and efforts of the forester will be badly scattered and thinly spread over a broad surface, thus being unproductive of large or definite results in studying economic situations or in assisting in needed forestry developments of broad scope.

"From the many fields of activities open to us," said Mr. Butler, "I have endeavored to place my finger on the one or two of greatest possibility from the standpoint of broad national need. Considering the depleted character of the eastern forests and the rapid shrinkage now taking place in the southern forests, there can be no question but that the twenty-five million acres of cut-over forest land in the lake states and the forty million acres of similar land in the south must be classed as regions of outstanding importance in supplying our future needed growth. The possibilities of forest growth in these two regions are very great, but with the exception of one or two states, there is unquestionably less actual forestry being accomplished than in the eastern and northeastern and in the far western states. The need for a proper public conception of the economic aspects of forestry, for forestry education, forest laws and information on the forest growing possibilities of vast tracts of land suitable only for growing forests, is, I think, more highly concentrated in the lake states and the south than in any other parts of the United States."

Mr. Butler will divide his time between the south and the lake states as, in his judgment, will best serve to advance his objects. It is the plan to cooperate with local forest agencies in just as far as possible, assisting them in working out their larger problems and in bringing home to the public their economic interests as now affected or threatened by local and national forest depletion. The board agreed that the forester for the association should devote himself to problems and situations of large import rather than to general representation which must necessarily be of more superficial value.

The question of the forester's attendance at meetings was discussed by the board. Mr. Butler pointed out that practically all the forester's time might be spent in

representing the association at meetings which in one way or another were of a forest character, but that such a policy would preclude the accomplishment of the real purposes for which the forester should stand. The association's forester should, however, endeavor to attend meetings which are of special importance.

In discussing legislative situations and the opportunities for the association to be of great help in that direction, Mr. Butler in his report stated: "That leads me to suggest the desirability of strengthening the association's propaganda or legislative work. I have mentioned this to Mr. Ridsdale and I think we are agreed that we need to organize better for this work. We should not only maintain an up-to-date list of all forestry and allied organizations in the country but we should keep an index of practically all organizations, commercial and otherwise, whose interests dove-tail into the forestry situation in one way or another. We should have these organizations classified in such a manner that when any particular subject or measure needs legislative support, we can immediately put our fingers upon those organizations whose interests are most directly involved and whose support will therefore be most responsive to telegraphic summons or written communication."

Action by the board of directors on Mr. Butler's report also carries with it the working out of a definite legislative and editorial policy with respect to forestry. This will be done by a sub-committee of the board to be appointed to advise with the forester as his work develops. As to the need of such a committee, entirely aside from the formulation of definite policies, the forester's report stated: "Many matters are certain to arise from time to time on which I will want advice. Such an arrangement will be very helpful to me and to my work and it will establish, I think, closer contact with the board and the forester, a thing desirable from all standpoints."

In another part of his report, the forester stated: "Another subject I should like to touch upon, not in the way of a recommendation at this time but as something for us all to be thinking about, is the question of association affiliations. Forestry sentiment is developing very rapidly. Established organizations of all kinds are becoming more and more interested in forestry while new forestry associations are coming into being. There are today county, state and interstate forestry associations. I believe that the American Forestry Association should supply the machinery by which these and other organizations may unite their strength on forestry problems and function in a much larger and stronger way. I appreciate that the financial aspect of any affiliation plan must be very carefully considered, but if the association can offer something definite, if it can make a clear showing of advantage to the local organizations, I think we shall find the latter in a very receptive state of mind."



# TREE SEEDS FOR FRANCE AND GREAT BRITAIN

ON April 6, the anniversary of the entry of the United States into the World War, Mr. Charles Lathrop Pack, president of the American Forestry Association, presented 100,000,000 Douglas fir seeds to France and Great Britain to be used in replanting the areas of France devastated by the war and the areas in Great Britain where her forests and woodlands were cut for war purposes.

On behalf of their governments, the seeds were received by His Excellency Ambassador Jusserand for France and by Mr. J. J. Broderick, counsellor of the British Embassy, for Great Britain. These representatives feelingly expressed their appreciation of Mr. Pack's gift. The presentation was made at the headquarters of the American Forestry Association. The seeds were made ready for shipment in 125 bags.

Declaring the seeds seemed to understand what was expected of them Ambassador Jusserand said:

"Once more America is coming to the rescue. We did not believe that our gratitude could be increased, but it will be by what you are doing.

"Of few things were we prouder than of our forests, well kept owing to the exertions of the pupils of our National School of Forestry at Nancy. The immense importance for a people that every citizen be a useful citizen, and every parcel of the national territory be of use, is now better understood. The existence of coal and oil does not depend on us; we can consume it, not make it. But the existence of forests depends on us, and what does that existence mean? It means well regulated waters which will insure the fertility of plains and valleys, it means renewable stores of heat and force, renewable timber for our houses, and a thousand other purposes. I say nothing of what it supplies for mere enjoyment: shade, beauty, quiet, the song of birds. The forest is the friend of man; man should be the friend of the



ONE HUNDRED MILLION TREE SEEDS FOR FRANCE AND GREAT BRITAIN

A gift made by Charles Lathrop Pack, president of the American Forestry Association, on the occasion of the anniversary of the entry of the United States into the World War. The ceremony took place at the headquarters of the Association.



forest; hence what we have long done on that line in France.

"Our forests suffered terribly from the war as some of you may have seen; where for centuries trees waved their green foliage nothing is left now but barren ground. As we must reconstruct our houses, so we are now trying to reconstruct our forests. And there your generous help comes in, most efficacious and welcome.

"Strange it may be, but surely providential, that in the same way as your boys took kindly to our population, American tree seeds take kindly to our soil. The results are wonderful; it seems as if those diminutive scions of the American stock understood that it is a question of a great and friendly country which should be helped with all speed; and trees from your seeds are conspicuous for the rapidity of their growth. They are in their way worthy representatives of you, kind-hearted Americans, toward whom our increasing gratitude will never fade."

Mr. Broderick in accepting the seeds for Great Britain said:

"By his gift of tree seeds Mr. Pack is aiding France to maintain her century old forest policy and encouraging Great Britain in making her newly adopted policy a success in the belief that the inspiration and example of these two countries will lead the United States to put a stop to the destruction of her greatly depleted forests, to replant her idle forest lands and to adopt a forest policy which will provide for the future needs of all her people."

In presenting the tree seeds to the French and British governments, Mr. Pack said:

"On the statue to Rochambeau in Lafayette Park, opposite the White House, are these words: 'We have been contemporaries and fellow-workers in the cause of Liberty.' This date, April 6, marks the day when the United States threw itself into the scales of warfare on the side of that cause of Liberty. I present these tree seeds to your governments in order that the millions of trees that will be born of them will keep ever new the memory of

your men and ours who gave their lives for that cause of Liberty.

"I give these seeds to France so she may grow one hundred million American trees. France needs these seeds to restore her forests and woodlands in the battle zones where they were cut down for war-time purposes or destroyed by conflict. The trees will be placed on her battlefields and will be perpetual memorials to the American soldiers who fought and bled there. They will be perpetual because France in her great wisdom has a forest policy which maintains steady production of lumber without decreasing her forest area. In this she sets the United States an example which we have not learned to follow but which we must follow and without delay.

"This forest policy of France made it possible for France and her Allies to win the great war. The United States must have a forest policy if she means to be safe from war defeat in the future. So these Douglas Fir seeds grown in French soil will provide timber for France for all future generations and her forests of American trees will forever remain as a memorial to the friendship of the two great Republics whose soldiers have fought shoulder to shoulder on the home soil of each.

"Since the war Great Britain has been quick to take up the scientific rehabilitation of her forest resources. Being close to the scene of conflict she cut until little remains of her famous wooded areas. War is a costly lesson but Great Britain is profiting by that lesson by pushing the rebuilding of her forests as rapidly as possible under the direction of the British Forestry Commission.

"Will America learn that lesson? It may turn out that, after all, these tree seeds will be in reality a gift to the American people, for seeing the great need after the great sacrifice your countries made, our own people will come to see that the millions of idle acres in their own country should be put to work growing trees as speedily as possible. If it should so turn out, your countries with these trees across the seas will have done a great service, the greatest service that can be done this country at this time."

## OUR NEWLY ELECTED OFFICERS

THE election, by ballot, of officers of the American Forestry Association, was completed on March 25, and the tellers have announced the election of the following new officers:

President—Mr. Charles Lathrop Pack.

Treasurer—Mr. Robert V. Fleming.

Vice Presidents—Hon. M. L. Alexander, Mr. Henry C. Campbell, Mr. Fred C. Knapp, Mr. Everett G. Griggs, Mrs. Warren G. Harding, Dr. John Grier Hibben, Mr. Jesse M. Overton, Mr. Thomas H. Owen, Dr. Joseph Hyde Pratt, Mr. M. B. Pratt, Dr. J. T. Rothrock, Prof. Filibert Roth, Mr. Harvey N. Shepard, Mrs. John

Dickinson Sherman, Hon. B. H. Snell, Mr. Bonnell H. Stone, Mr. Hermann von Schrenk, Mr. Lou D. Sweet, Hon. John W. Weeks.

Directors—Mr. Elbert H. Baker, Mr. Robert P. Bass, Mr. F. W. Besley, Col. Henry S. Graves, Col. Wm. B. Greeley, Mr. George W. Sisson, Jr., Mr. E. A. Sterling.



# OUR VANISHING WILD FLOWERS

By Winthrop Packard

THREE hundred years ago when the Pilgrims landed the resources of this great American Continent, then untouched by civilization, seemed boundless and inexhaustible. For centuries, in the main, they so remained. Only about fifty years ago came to us the first suspicion that they might be otherwise. Suddenly, as time is measured, it dawned upon us that there could be an end



Courtesy of the Arnold Arboretum.

KALMIA LATIFOLIA. A BRILLIANT BORDER OF KALMIA SET OFF BY THE SOMBRE GREEN BACKGROUND.

to the Bison, the beaver, the passenger pigeon. Now we know that they were not only going when we realized it, but that they were practically gone. You find people still searching for passenger pigeons, believing that they will be able to locate them and earn the reward offered, so strong is the delusion that it is impossible to so soon exterminate a once mighty species.

The same is true of our forests. It is inconceivable to the average man that we cannot go on in the old, happy-go-lucky way, sweeping all before us, replacing nothing and yet always having enough. Within less than half a century this condition has come to be recognized by the thoughtful and a remedy is sought. And now we are beginning to be very thoughtful about the future of our more beautiful wild flowers. For already over wide areas where they were once common, we miss them. Always they are the most beautiful and most en-

dearing species. We tramp to their accustomed haunts at the blossom season, our hearts full of their fragrance, our minds assured that they will greet us as of old—and they are not there. Perhaps the stream that watered them has been depleted, or the trees that sheltered them have been cut. More likely, we find the ground trampled where they were uprooted by someone who loved them not wisely nor too well, but only greedily.

There are those who love the wood rose and leave it on its stalk, who are indeed fit to be the friends of Emerson and Thoreau, but they are still far too few for the good of the wild life which they seek to protect and their voices as yet are those of prophets, crying in the wilderness, little heeded by the world of men.

The trouble lies in part in the greed of humanity, more in its carelessness, most of all in its ignorance. Its remedies would seem to be indicated in the reverse ratio. To save our vanishing wildlife we must educate, admonish, restrain—restrain where we must, admonish where we may, educate always and persistently.

The people who find enjoyment in killing and destroying are numerous still, people whose innate impulses in the open leads them to kill the bird, to cut the tree, to pluck the wild flower through some inborn desire for possession which can be gratified in no other way. But there is a far larger and we must believe growing class who get value, not from shooting the bird but from watching it live and studying its habits, by associating with it alive rather than gloating over it dead, who would rather know the tree and enjoy its shade than to cut it and to whom the living, growing wild flowers give



THE BEAUTIFUL FLOWERS OF KALMIA, OR MOUNTAIN LAUREL, ARE BORNE IN LARGE DOME-SHAPED CLUSTERS OF EXQUISITE PINK TO WAXY WHITE.





EVERYONE LOVES TO HUNT THE SHY ARBUTUS IN THE EARLY SPRING WOODS AND ITS HIDING PLACE BENEATH THE LEAVES IS OFTEN DIVULGED BY THE INTOXICATINGLY SWEET ODOR OF THE BLOSSOMS.

joy and comfort that no plucking or grasping possession could ever produce. Some happy day the world will have moved forward to the point where all will



CLAYTONIA VIRGINICA, APTLY CALLED "SPRING BEAUTY"—A LUXURIANT CARPET OF FRAGRANT BLOSSOM IN THE WOODS.

agree with Emerson and understand his point of view, will wish to know the birds without a gun and to leave the wood rose on its stalk and it will be fortunate if the birds and the wood roses remain to be known and loved.

Certainly no present or future regrets or self restraint can bring back to us vanished species. We must practice restraint or restoration right away or it will be too late. Fortunately, unlike the passenger pigeon, the Eskimo curlew, the Labrador duck and some others, our wild flowers have not yet vanished except from certain restricted areas. They are merely vanishing. We can



PINK LADY'S SLIPPER (*CYPRIPEDIUM ACAULE*). LOVELIEST OF THE LADY SLIPPERS, IT IS FOUND IN PROFUSION IN SWAMPY OR WET WOODS.

hold them where they are, bring them back to areas once tenanted, now barren, if we will.

The Pilgrims found and loved the arbutus, naming it "the May" in fond memory of the Hawthorne hedges at home, always white and fragrant at the mayflower season. Today you will go far from Plymouth Rock before you will find Plymouth mayflowers. Their alluring scent still make the remoter portions of Pilgrim land worth visiting in May, but their former abundance is greatly reduced even miles away from "The Rock."

One of the sights of the Arnold Arboretum, that great outdoor museum of growing trees and shrubs, is the great bank of mountain laurel that shines with such wonderful beauty against the dark background of hem-





Courtesy of the Arnold Arboretum.

TWO LOVELY VIEWS IN THE ARNOLD ARBORETUM—THAT FAMOUS SANCTUARY OF TREES AND FLOWERS. ABOVE, A ROSE-BORDERED WALK ALONG THE MEADOW ROAD, AND BELOW, THE LOVELY AMERICAN SUMMER-FLOWERING ELDER, BLOOMING AT THE EDGE OF THE LILY POND.





BLOODROOT (*SANGUINARIA CANADENSIS*)—ONE OF THE MOST STRIKING AND EARLIEST OF THE WILD FLOWERS OF THE WOODS—A FAMILIAR SIGHT WITH ITS WAXY BLOSSOMS AND DEEP RED STEMS.

lock hill. That it exists within the city limits of Boston is due, of course, only to the fact that it has police protection. Let that vigilance be relaxed for but a single day in blossom time and let word go forth that it might be plucked with impunity, it is easy to believe that neither root nor branch would be allowed to remain.



THE SPRING ORCHIS (*ORCHIS SPECTABILIS*) IS ONE OF OUR LOVELY NATIVE ORCHIDS, WHICH MUST BE PROTECTED AGAINST EXTERMINATION BY MISGUIDED ENTHUSIASTS.

To the perfectly human desire to get possession of beauty would be added also the perfectly human competitive instinct, to get it before the other fellow did—and it would be got while the getting was good.

The New England country in regions more remote from large populations still shows massed mountain sides of laurel, but the human desire for beauty and the competitive instinct are having their effect on these. The unprotected laurel within easy reach of any large city is gone and now the automobile is placing that of the slopes of Wachusett, of the mountains of southern New Hampshire, of Vermont and of the Berkshire Hills within the reach of thousands. The automobile now carries the city to the country and brings it back again between dawn and dark. Too often, alas, it comes back



LUPINUS PERENNIS, OR WILD LUPINE—THOSE TALL AND GRACEFUL STALKS OF RICH BLUE.

laden with what was on the mountainside beauty superlative, but is when it reaches the city only a tattered remnant to be too often consigned to the ash can on arrival.

The thought here should not be misunderstood. The love of the wood rose is rightfully in all our hearts. That city motor cars can take city dwellers to it in a day is a boon that the genius of modern civilization has lately conferred and that is worth much. It is necessary that with privilege should go the power of self-restraint that teaches all not only to love beauty but to seek possession of it only in moderation that others, as worthy lovers of it, may equally enjoy it.

How to bring this about where wild flowers are left



to us is the problem before the flower protectionists, the problem that conservationists meet at every turn and that we must solve or the desert will inevitably follow our present civilization and overtake it as it has those of the past.

One's first thought is that we may save the wild flowers by cultivating them. Without doubt thousands of people have been moved to try this with trailing arbutus. Few, indeed, have succeeded. Transferred to good garden soil, carefully watered and tended, enriched with fertilizer or whatever you please the Mayflower plant obstinately refuses to respond to kindness and wilts and dies as if transplanted into unmoistened dust. Scientific investigation carried on by the United States Department of Agriculture of late years has shown the reason for this. It was found, for instance, that that most useful wild fruit, the blueberry, luxuriates only in soil so acid that garden plants simply die of starvation when placed in it. As the blueberry placed in ordinary alkaline garden soil invariably dies, so does the arbutus.

times of our most loved and commonest wild flowers. Search the botanical textbooks from the old-time standard of Asa Gray down to the present day and you will find the fruit of the mayflower invariably referred to as a carpel—a dry indehiscent pod—yet Frederick Colville found in his researches hundreds of mayflower fruits in a single afternoon on a New Hampshire hillside and everyone of them was white-fleshed and edible and as juicy as a strawberry, no pod at all, but an enlarged, fleshy receptacle. The ants, lovers of all sweets, harvest these berries and bear them to their underground sandhill nests, whence the sprouting seeds send forth

more trailing arbutus to gladden the



hearts  
of flower lovers.

It may readily be seen that the cultivation of the mayflower by transplanting or raising from seed is a difficult if not impossible proposition for the average gardener. There remain two other methods, the first the prohibition or at least the restriction of the privilege of picking it. In all places near large cities the wild things of the woods become a commercial proposition. While the average woodland visitor loves the mountain laurel for its conspicuously beautiful flowers and takes personal toll of them—a toll which is harmless in a single case, but which merges

in complete destruction when one motor load of visitors follows another all day long—the florist sweeps the hill-sides bare of branches at all seasons that he may sell the evergreen leaves for decoration. Thus love of flowers and love of money combine to make deserts of the hill-sides that in June were unbelievably beautiful with pink bloom and throughout the rest of the year were brave with unflinching green. As with the laurel so with the holly, the flowering dogwood, the evergreen ferns. Commercialism is making them rare throughout great areas, will in the end extirpate them unless the spirit of conservation is roused in the community and conquers. Some-



HEPATICA—EARLIEST AND DAINTIEST FLOWER OF SPRING, DELICATELY SHADED FROM LILAC WHITE TO PALE PURPLE AND LIGHT VIOLET; AND ABOVE, IN THE OVAL, AN EXQUISITE CLUMP OF GAY MOUNTAIN LAUREL.

tus. Moreover, it is found by microscopical examination that a nitrogen fixing bacteria, such as that which in the root tubercles of the clover nourishes the plant, occurs also with the blueberry and mayflower, both inhabitants of acid-soil barrens. The proper conditions for the plant being fulfilled the very acid soil and the special root haunting bacteria, being supplied, the mayflower may be transplanted or raised from seed and will thrive.

It might be told in passing that these experimental investigations by the Department of Agriculture gave us an interesting sidelight on how little we know some-



how, some way, we must protect these lovable and desirable plants from ourselves if those who follow us in the world are to have the pleasure of knowing them.

Of the herbaceous wild flowers, concerning which the nature lover needs to feel alarmed, the list might well vary with the locality, but one can name many on which all would agree, such as the arbutus, the fringed gentian, pink mocassin flower, bloodroot, hepatica, columbine and spring beauty. These are flowers, singularly attractive to all and particularly susceptible to destruc-

many other species would have withered and been thrown away.

Of the power of many annuals to survive excessive picking we need have no fear. Asters, goldenrod, daisies, buttercups seem to defy destruction. Flower lovers who enjoy getting great armfuls in bloom may take their pleasure with these without fear of unfortunate results, but other rare and even more beautiful flowers like the gentian must be protected or we will lose them forever.

So much for the disease. The remedy must begin and very likely will end in education. Law may help, but without an enlightened and aroused public opinion behind it law fails of enforcement and is useless or worse. Education alone can provide the enlightenment.

The Sanctuary movement for the preservation of wildlife is now rooted and thriving in this country. The concrete expression of the idea began with the desire to save the birds. Bird sanctuaries established during the last 20 years by the federal government alone now number seventy or more. Theodore Roosevelt, wise and efficient in so many ways, was our great bird sanctuary



FRINGED GENTIAN (*GENTIANA CRINITA*) IS PROPAGATED ONLY BY SEED AND THIS BLUE BEAUTY SHOULD BE PROTECTED AND SAVED FROM RUTHLESS DESTRUCTION.

tion of the plant by picking that is rough or reckless. The fringed gentian, for instance, is an annual propagated only by seed, growing only in favored localities and blooming only for a few short weeks in each year. Sweep a given locality clear of the blossoms just once and the plant, thus deprived of seed production, fails so far as that location is concerned forever more. It seems sometimes as if the individual plant realized this. A handful of gentians plucked and placed in water, will continue their bloom and the effort to mature seeds long after



Courtesy of the Arnold Arboretum.

DAISIES—SPREADING A CARPET OF WHITE. VALUED FOR THEIR EARLY WHITE IN SUMMER FIELDS, AND THEIR CHEERY SUCCESSION OF VIGOROUS BLOOM.



President. Under his proclamation most of these were established, beginning with the few acres of Pelican Island on the Indian River in Florida—the first one—and increasing in size and area in the Yukon Delta in Alaska to about the size of the State of Massachusetts. Roosevelt, great in so many ways, was preeminently a leader in his love for wild-life and did a wonderful work in teaching the nation how to protect it. These sanctuaries have been an actual and a spiritual power for the protection of birds whose value the world has come to recognize.

States also have taken up the movement, Massachusetts having a dozen or more State bird and game reservations, some owned by the State, others consisting of privately - possessed land over which the State extends its protecting authority. Perhaps the most widely known of these is the Moose Hill Sanctuary of the Massachusetts Audubon Society at Sharon, Massachusetts. This, established some five years ago for the protection of birds, now through the cooperation of the Massachusetts Society for the Protection of Native Plants, protects the wild flowers as well. In fact, the balancing value of all wild life is here recognized and it is realized that to protect one form the others must be equally protected. If such protection for the wild flowers and other desirable forms of wild life could be extended to

all bird reservations their value to the birds and to mankind would be greatly enhanced. At the Moose Hill reservation not only native rare and interesting

species are protected, but many others which were not native, but to which the environment is favorable have been introduced and have thrived. The warden in charge protects the trees and shrubs, the wild flowers and the harmless other wild creatures of the woods as well as the birds. Proof that the sanctuary idea appeals to the public which is eager to observe, to learn and to carry the good idea elsewhere, may be found in the fact that in the single month of May nearly a thousand people visited the place.

Not every city can have an Arnold Arboretum with its wonderful collection of trees and shrubs from all over the world, cultivated and labelled and free to public inspection at all times, but near every city can be established a wild-

life sanctuary where wild flowers will be adequately conserved and increased for the pleasure and enlightenment of the public.

Patient and persistent education in regard to our wild flowers and the need of protecting them will bring this about. Two societies entirely altruistic in aims and methods are at present working wisely and diligently with this great end in view—The Society for the Protection of Native Plants, and the Wild Flower Preservation Society and they deserve the support of all nature lovers.



Courtesy of the Arnold Arboretum

GREAT CLUMPS OF KALMIA, OR MOUNTAIN LAUREL,  
AT THE FOOT OF HEMLOCK HILL.

## THE AMERICAN TREE

Plant we our Native Tree,  
Most noble Hickory,  
Best tree of all;  
Strongest in forest shade,  
Towering unafraid,  
Best tree God ever made,  
Best fruit of fall.

Earth-mother fold to Thee  
This, thy young daughter-tree,  
Fold to thy breast;  
Dress her out green in spring,  
Call the sweet birds to sing,  
Colors in autumn bring,  
Gayest and best.

Nourish her, native sod,  
Bring her up well, O God,  
Worthy of fame;  
Now, in thy tender care  
Leave we this daughter fair,  
Breathing to Thee a prayer  
In His dear name.

(The above lines, suitable for school memorial tree planting exercises and to be sung to the tune of "America," were written by Marta Scott Conser, of Memphis, Tennessee, long known as a writer on conservation and forestry, and an earnest advocate of the planting of all kinds of nut trees wherever and whenever possible.)



# A NEW CHINQUAPIN

By George B. Sudworth.

Dendrologist, United States Forest Service

THE true chestnuts, species of the genus *Castanea*, grow naturally in the temperate portions of eastern North America, middle and southern Europe, northern Africa, western Asia, central and northern China, and Japan. About four distinct species are now known to occur in all these regions. The common chestnut-tree of Europe, *Castanea castanea*, was the first tree of the genus that became known to science, and is usually referred to in the books as *Castanea sativa*, *C. vulgaris*, and *C. vesca*, all of which are, however, antedated by the oldest name, *Castanea castanea*. The chestnut-tree of China, a large

tree species, the common chestnut (*Castanea dentata*), is sometimes 100 feet high and 3 or 4 feet in diameter, its range being roughly from Ontario to southern Michigan and southward to Delaware, southern Indiana and Illinois, and thence in the mountain sections to Georgia, and to western Florida, Alabama, and Mississippi. The smaller tree species (*Castanea pumila*), commonly called Chinquapin, is 25 to occasionally 40 feet high and 2 to sometimes 3 feet in diameter. It is distributed from New Jersey and southern Pennsylvania to Florida and westward to Oklahoma and eastern Texas. The fourth



CASTANEA PUMILA ASHEI SUDWORTH

A new variety of chinquapin Staminate (male) flowering branch (left); pistillate (female) flowers (center); nut and fruiting branch (left). Illustration about one-third natural size.

tree, and of Japan, a small or medium-sized tree, are variously considered distinct species or varieties of the European chestnut, the Chinese tree being known technically as *Castanea bungeana*, and the Japanese tree as *Castanea castanea pubinervis*. So little is now known of these trees, at least of the Chinese Chestnut, that a satisfactory conclusion has not yet been reached regarding their botanical status.

The second, third, and fourth species of chestnut now known are natives of eastern North America, two being trees, and the fourth being a shrub. The larger of the

species, the Dwarf Chinquapin (*Castanea alnifolia*), growing from North Carolina to Georgia, is a low shrub which forms thickets by running roots. An arborescent variety of this shrub, recently described as *Castanea alnifolia floridana* Sargent, and locally called Chinquapin, is more often a shrub, but in Florida it sometimes becomes a tree 30 or 40 feet high and 8 to 12 inches in diameter, its general range being in North Carolina, Georgia, Alabama, Florida and Louisiana.

In the coastal plain of southeastern United States occurs another arborescent chinquapin that appears to be differ-



ent from the common chinquapin (*Castanea pumila*), to which it seems to be related. My attention was called to this form by W. W. Ashe, of the Forest Service, who has studied the living plants for a number of years and collected a large series of specimens from North Carolina to Louisiana. This new form, which is not uncommon in the South Atlantic and Gulf Coast regions, has smaller leaves, shorter aments, and larger nuts, than the common chinquapin, and I am here proposing for it the name *Castanea pumila ashei*, in honor of its discoverer, W. W. Ashe. Its distinguishing characteristics are as follows: Occasionally a tree 10 m. in height, but commonly a shrub 2-4 m. high, not propagating by underground stems. When the flowers open the leaves are 4-7 cm. long, and when mature they are 5-8 cm. long, and 2-4-5 cm. wide, in outline being elliptic, oblong-ovate or frequently somewhat obovate, prevailing obtuse at the narrowed base and obtuse or abruptly acute at the apex, but sometimes, especially on fruiting shoots, lanceolate and pointed at the apex and much narrowed at the base; sharply sinuate-toothed, dark green and finally glabrous above, closely gray-pubescent beneath, except on the veins, but never soft-velvety, as in *C. pumila*, (none of the leaves ever becoming glabrous or glabrate), and marked with 10-18 pairs of prominent veins. Shoots of the season, and often the buds, are more or less gray-pubescent, at least at first. Staminate flowers continuous; when the open, which takes place during the last week of May in northern Florida, and the first week of June in eastern North Carolina, they are 6-10 cm. long, and 5-7 mm. thick; involucre scales canescent, ciliate, the style being scarcely 1 mm. long; involucre of fruit bur-like, 1-2.5 cm. thick including the 5-7 mm. long, branched, rigid, gray-canescient spines which as a rule, are not sufficiently dense to completely conceal the involucre, as they do in the case

of *C. pumila*; nuts subglobose, as wide as long. *Castanea pumila ashei* grows on high sandy lands or on the edges of sandy hummocks and swamps within the coastal plain from northeastern North Carolina southward to northern Florida, and westward to Urania, Wynn Parish, Louisiana; probably extending into southeastern Texas.

This plant differs from *C. alnifolia* Nutt. in the absence of root stock; and from *C. alnifolia floridana* Sarg., in being more pubescent, and in having somewhat larger fruit and nut, as well as considerably larger leaves, there being about two additional pairs of veins. None of the leaves of this variety lose their pubescence. The lower leaves on the shoots of *C. alnifolia floridana* invariably become glabrate and green beneath or glabrous, except for a few scattered hairs near the midrib, the same being true of the petioles and shoots.

It differs from *C. pumila*, with which it is associated along the upper edge of the Atlantic coastal plain, in its smaller and blunter leaves, usually obovate in form (those of *pumila* being lanceolate or oblong), and from 10-20 cm. long when mature, and 8-11 cm. long when the plant is in flower, clothed with very close, gray pubescence, not soft-velvety as in the case of *C. pumila*. It differs further from *C. pumila* in its more slender aments (those of *C. pumila* being 10-13 cm. long and 7-10 mm. thick), in having the involucre of the nut less densely covered with spines, which are stouter and gray-canescient, and also in its larger nut. This variety is possibly the *Fagus pumila* var. *serotina* of Walter (Fl. 233, 1788) who separates early and late flowering forms, but without descriptions. Type W. W. Ashe, May and September, 1909, Parmelee, Martin County, N. C. Specimens of this plant from Florida have been distributed by many collectors and it is well represented in herbaria.

## A GET-TOGETHER MEETING

THE dedication of "The Roads of Remembrance," a three day meeting of leading foresters and lumbermen of the United States and the annual convention of Intercollegiate Forestry Clubs of this country and Canada, took place at Syracuse April 20-22 under the auspices of the New York State College of Forestry at Syracuse University.

Practically all forestry colleges in North America sent delegates. The Northeastern Retail Lumbermen's Convention and the meeting of the New York Section of American Foresters coincided with this gathering of the forestry clans. The New York State Forestry Association and other conservation interests were represented.

Colonel William B. Greeley, Chief Forester of the United States, and Charles Lathrop Pack, President of the American Forestry Association, were on the list of speakers. Deans and professors of colleges, presidents of large corporate interests, experts on everything from salesmanship to paper manufacture participated. There were business meetings, banquets and powwows in which the Chamber of Commerce took part.

The convention was a reflection of the growing interest in forestry and its contingent problems. It was a get-together meeting, a manifestation of the desire on the part of professional foresters and the big lumber interests to cooperate in the production, preservation and management of an essential national resource, the forests.

The dedication of the Roads of Remembrance took place on the main automobile route from Buffalo to New York between Mycena and Chittenango, April 21. It celebrated the beginning of a project of roadside tree planting which will extend across the state and will undoubtedly lead to the development of widespread highway beautification by the planting of trees. Already other sections of the state have taken up the idea and are preparing to beautify the roads with trees. The exercises were conducted by prominent men in public life, military, civic and religious circles.

The planting of the highway was in memory of those who fell in the world war. The accomplishment of the work was made possible through the cooperation of the State Department of Highways, the American Legion, the property owners along the route, donations from private tree nurserymen and the Forestry College. This living memorial is particularly fitting because it was along the tree-lined highways of France that the American doughboy lived, fought and died for an ideal. The beauty of the "Roads of Remembrance" and its extent will constitute a constant reminder of the heroism of our citizen soldiers as long as time endures, not in any particular community, but to the people through the state. It will be a comprehensive commemoration of the sentiment and patriotic sacrifice that contributed so materially to the salvation of the world in 1918.



# Editors of Country Denounce Plan to

*Pittsburg Post:* The American Forestry Association, ever a leader in movements having for their end the protection and restoration of our timber resources, is at the head of the present fight. Having members in every state, it is an organization of no little influence, and the public may rest assured that, against opposition from so powerful a society, the advocates of the obnoxious change in the Forest Service will have no easy time.

*Louisville Courier-Journal:* Much good will be done by the publicity batteries of the American Forestry Association, turned mercilessly upon the bills under which the Forest Service would be taken out of the Department of Agriculture and put in the Department of the Interior, and under which the resources of Alaska would be made available to exploiters. The more that is said about the attempted raid upon forestry and upon forests, through Congress, the less the probability of its success. The American Forestry Association says a good deal.

*Cleveland Plain Dealer:* Secretary Fall, prickling with resentment because of the earnest efforts of American conservationists to prevent the transfer of forestry control from the Department of Agriculture to the Interior Department, complains that he is the target of propagandists. The Secretary is absolutely correct. There is a nation-wide propaganda against the transfer. It is significant that practically all the propaganda is in opposition to the change. Those who advocate the transfer have refrained from trying to convince the public. Their incentives are political, and they have hoped that political arguments would be sufficient to persuade Congress. It is not unlikely that they would have been sufficient had it not been for the propaganda which has been disseminated by the American Forestry Association. There is good reason to hope that aroused and enlightened public sentiment will prevent the backward step which has been contemplated. Without the propaganda this sentiment could not have been created. The campaign to save the forests is an instance of propaganda at its best.

*San Francisco Bulletin:* Reports from Washington indicate that Secretary Albert A. Fall desires to reabsorb into the Department of the Interior the United States Forest Service which was rescued from it by the Department of Agriculture in 1905. It is now proposed to disrupt that service from the proved and sympathetic association with the Department of Agri-

culture under which its remarkable progress was achieved, and to revert its control to the department under which its efficiency became so apparent that even that department itself was glad to relinquish it without a struggle. Therefore, any measure whereby the Forestry Service might be dissociated from the Department of Agriculture and reestablished under another department that has already demonstrated its inability to control it, would be an alarming step in any process of departmental reorganization that may be attempted.

*Albuquerque Journal:* Fall demands that the Forestry Service be taken from the Department of Agriculture and turned over to him. The demand is unreasonable and can have no good motive behind it. Conservation and reforestation are agricultural processes. The administrative functions are professional. There is no justification for the proposed change.

*Southern Agriculturist:* Farmers are just beginning to realize what forest conservation means to them, and no other department of government is so well fitted to handle forestry work, or can so fit it into the national life, as can the Department of Agriculture. Farmers should let their congressmen and senators know in no uncertain terms that they do not wish the Department of Agriculture dismembered.

*New York Mail:* The move now made to transfer the Forest Service back to the Department of the Interior—"the real estate branch of the government"—is simply a counter-attack by those who would exploit the public domain for their own pockets. It must be defeated.

*Lincoln (Neb.) Journal:* Incidentally, the American Forestry Association has taken active steps against the change. If forestry isn't agriculture, it is asked, what is it? Perhaps a more potent reason for the opposition is the fact that Secretary Wallace is a whole hearted conservationist while Secretary of the Interior Fall is, well, from New Mexico.

*Des Moines Register:* The cold facts about the Alaska matter ought to be known. The Government has now at great cost built a railroad there and opened up the field. Everything is now ready for the interests Secretary Fall has always been identified with to step in and take over the timber and mineral wealth of Alaska, under the usual plea of "developing" our resources. With the *Register* it is not

nearly so much a question of the proper distribution of authority between the Departments of Agriculture and of the Interior as it is of letting a man like Secretary Fall have anything to do with the disposition of the great resources that may yet be conserved for the benefit of the whole people. Secretary Fall belongs to the frontier, and his standards are the standards of the frontier. "Let him take who has the strength and let him hold who can." He should never have been put in the Cabinet in the first place, and his power should now most certainly not be increased.

*Newark (N. J.) News:* Altogether, Mr. Fall's argument does not get him anywhere, unless it is in the position of criticism of "a co-ordinate department of the government," which he attributes to and condemns in others. He certainly contributes nothing constructive to the main question—how best to conserve the disappearing forests, vital to the welfare of this and future generations dwelling on our lands, public or private.

*Boise Capital News:* The West will be called upon to make a stand for or against the Forest Service, if we are to judge the movements under way to attack it. Forestry is doing admirably where it is. There is not one sound reason of any kind for the proposed transfer. It is neither good administration, good business nor good politics to undo Roosevelt's work.

*Savannah Press:* The Service has little business with the Department of the Interior. There are stalking horses behind the grab.

*Grand Rapids (Mich.) News:* Secretary Fall's proposal has met with what apparently is almost unanimous opposition on the part of those who heretofore have concerned themselves most with forest conservation, from the farm bureaus and from the majority of the agricultural interests. The Michigan state farm bureau is among those organizations protesting against the Fall proposal. The American Forestry Association, the premier organization for forest conservation, has entered a strong protest.

*Idaho Daily Statesman:* The quarrel over the proposed transfer of the Forest Service to the Department of the Interior from the Department of Agriculture will end when we are able to decide whether a forest is a crop or merely real estate. If we



# Transfer United States Forest Service

decide that the Government has set certain areas aside for the purpose of growing trees and has gone into the tree-growing business on them, then it is proper to leave the Forest Service where it is, in the crop-growing department.

*San Francisco Journal:* The enemies of the forests are the private interests that seek to make a temporary present profit out of their destruction. Their arguments for the marketing of the timber are unsound because a little temporary relief today followed by a famine tomorrow is no benefit.

*Chattanooga Times:* The chief and most conclusive argument against the proposition to transfer the government Forest Service from the Department of Agriculture to the Department of the Interior was offered the other day by representatives of the American Forestry Association. "To do that," said Col. Henry S. Graves, formerly chief of the Service, "would simply mean two forest services for the growing of forest crops is the business of agriculture. Such a transfer would, therefore, mean duplication of effort and loss of efficiency."

*Daily Oklahoman:* There is no reason to conclude that the forests would be handled better by the present Department of the Interior than by the Department of Agriculture, as constituted at this time.

*Sacramento Bee:* For one thing is certain—the people are determined that no desecrating hand shall be laid on what remains of their once notable public domain. Nothing is to be gained by the proposed change, and much might be lost.

*St. Paul Pioneer Press:* There is little to be said about the transfer of the United States Forest Service from the Department of Agriculture into that of the Interior, as advocated by Secretary Fall, except in protest. Not a single potent reason has been advanced for a change.

*Kalamazoo Gazette:* Michigan's state farm bureau has just addressed to the sen-

ators and representatives of the state a protest against the proposed transfer of the United States Bureau of Markets and the Forest Service from the Department of Agriculture to the Department of Commerce and the Interior. The United States Government functions merely as a trustee in the administration of the country's agricultural and forest interests, and in the face of such pronounced opposition to a change like the one now proposed some very material arguments in favor of the transfer will have to be forthcoming—and so far they have not been given—before it will have a chance of attaining any measure of popularity.

*Syracuse Post Standard:* Secretary Fall would not have the confidence of the forestry associations. It is not objection to the Interior Department, but to the head of that department that stirs them.

*Bangor (Me.) Commercial:* We see no reason for this action and many reasons why it should not be carried out. There is no occasion to centralize the various interests of Alaska and many will see in the attempt another effort to turn the riches of Alaska over to private interests for the exploitation of this rich territory.

*Christian Science Monitor:* The lid has been taken off, and the truth about Alaska is being told. That is the solvent. Foremost in the organized campaign of education which is being carried on in behalf of Alaska is the American Forestry Association. Today Alaska is a vast storehouse, the ownership of which is vested in the people of the United States. Its riches should not be made the pawn of politicians and land-grabbers.

*Portland (Ore.) Telegram:* Until taken over by the Department of Agriculture the National Forests were at the mercy of politicians. Under that department forest preservation and rehabilitation has made all the growth it ever has made.

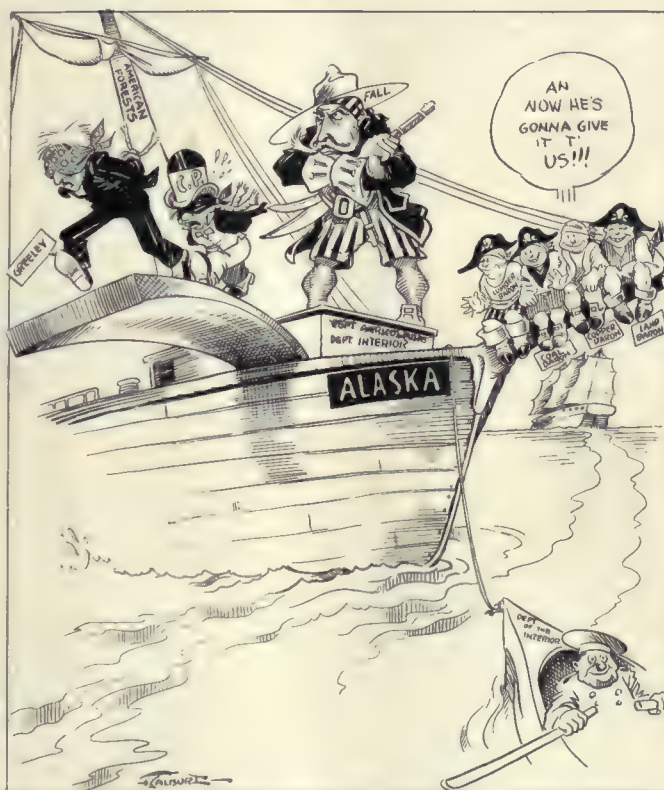
*Santa Fe New Mexican:* The newspapers of America are almost a unit in condemning the proposed transfer of the Forest Service.

*Grand Island (Neb.) Independent:* Commercialism is

now attempting to brush aside the Roosevelt caution, and to exploit the comparatively newer region of Alaska for its own individual profit.

*Washington Herald:* One of the great constructive achievements of President Roosevelt appears in danger. Forestry is doing admirably where it is. There is not one sound reason of any kind for the proposed transfer. It is neither good administration, good business, nor good politics. The forests should remain under the present direction.

## "WALKIN' THE PLANK"



Talburt—For the Scripps McRae Alliance Papers.

*Pueblo Journal:* Pueblo is in line with many other communities in objecting to the passage by Congress of the proposed bill providing for transfer of the national forests from the Department of Agriculture to the Department of the Interior. Why make a change when the forests are handled so admirably?

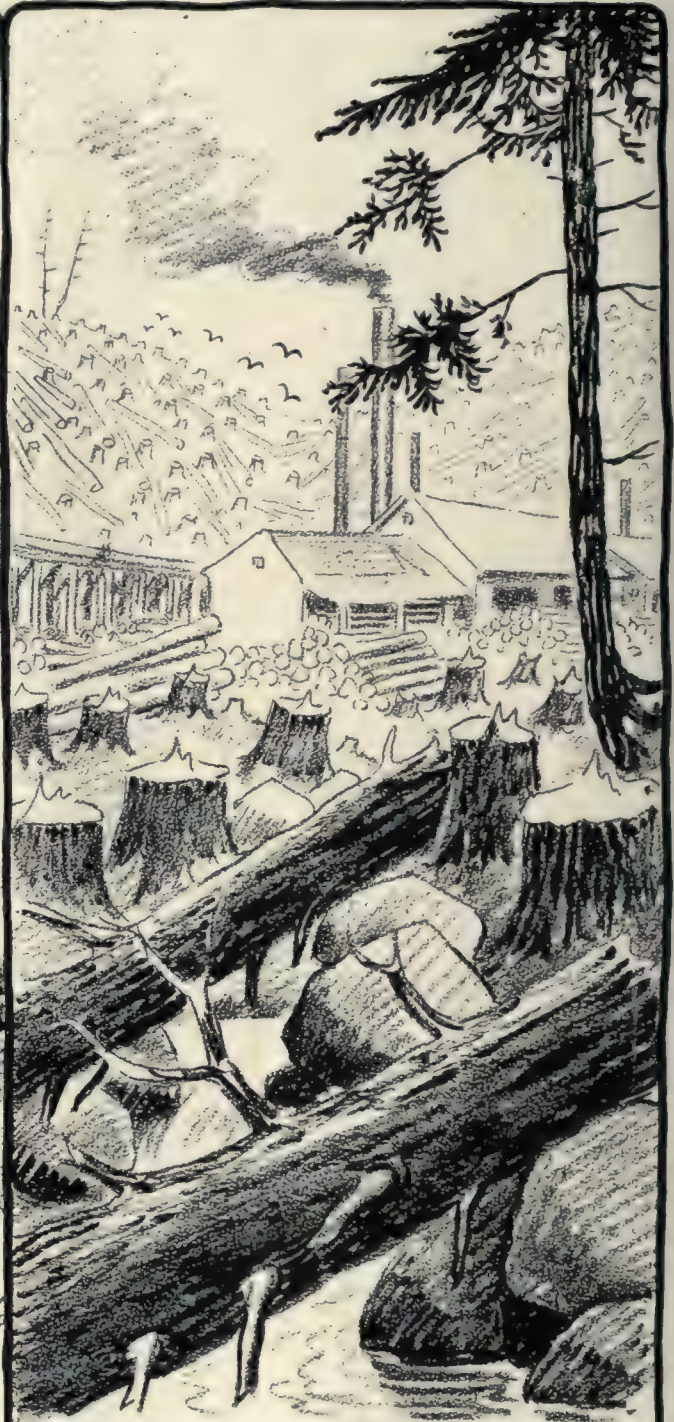
*Cincinnati Post:* The forests seem to be doing well, treated as they are as crops instead of real estate deals. Who aside from Secretary Fall wants them changed over from crops to real estate?



## WHICH SHALL IT BE?



CONSERVATION OF PUBLIC DOMAINS UNDER THE  
CONTROL OF THE DEPARTMENT OF AGRICULTURE—  
BUREAU OF FORESTS OF UNITED STATES AND THE  
AMERICAN FORESTRY ASSOCIATION—



— UNDER CONTROL OF DEPT. OF INTERIOR —  
"LIBERALIZING" FEDERAL CONSERVATION POLICY  
TO GIVE PRIVATE CAPITAL A CHANCE TO  
"DEVELOP" PUBLIC DOMAINS —

BUSHNELL—For Central Press Association.

### ONE OF THE CARTOONS ON THE FIGHT FOR THE NATIONAL FORESTS

So widespread has been the newspaper comment on the effort to take the National Forests from the Agricultural Department and place them under control of the Interior Department that many newspapers and magazine cartoonists have contributed their ideas to the fight. The above by Bushnell, for the Central Press Association, is one of the best.



**PENNSYLVANIA FORESTERS MEET**

The first meeting of the Pennsylvania Branch of the Society of American Foresters was held at Harrisburg, March 10, 1922. Of the 39 members of the Branch Association, 29 were present or an attendance of nearly 80 per cent. During the afternoon by-laws were adopted and the following program was carried out in full with brief discussions of each paper:—

National Forestry in Pennsylvania—L. L. Bishop. Some Special Planting Problems in Pennsylvania—Prof. Geo. S. Perry. The Development of Wood Technology During the World War—Prof. G. R. Green. An Effective Forest Fire Organization—Geo. H. Wirt. Following a banquet a business and social meeting was held. It was decided to hold a stated meeting each year on the last Friday in February and a summer field meeting in July.

The meeting was addressed by Dr. J. T. Rothrock, Honorary member and Prof. H. H. Chapman, member of the New England Section. J. S. Illick read an appreciation of Dr. Rothrock calling attention to his long life of service to forestry in the country and especially in Pennsylvania, and expressing regret at the retirement of Dr. Rothrock from the Forestry Commission of Pennsylvania.

Resolutions protesting against the proposed transfer of the National Forests in whole or in part, from the Department of Agriculture to the Department of Interior were adopted.

The following officers were elected:

Chairman—Hon. Gifford Pinchot.

Vice Chairman—John Foley.

Secretary-Treasurer—J. A. Ferguson.

**THE BIOLOGICAL SOCIETY**

The proceedings of the Biological Society of Washington are unique in the scope of subjects published upon. Volume 1 was issued between 1880 and 1882 and the present volume (35) contains the same great variety of subjects written by world authorities. All forms of animal and plant life are discussed and the entire world is covered. A bulletin, No. 1, (1918), includes a brief history of the study of Natural History in the District of Columbia, dating back to 1608. Interesting facts included are—an account of the earliest discovery of bison as eastern North America was near if not in the District of Columbia, lists of the plants and animals of the District of Columbia, a guide and maps to various interesting regions and much historical data. The price of this bulletin is \$2.15 postpaid and can be obtained from the Secretary, Bureau of Entomology, U. S. Department of Agriculture, Washington, D. C.

A paper on the Birds of the Washington Region was issued in 1921 and lists 299 species with notes on migration, breeding, etc. This is for sale at \$.50 Many other

papers of general interest are listed in the index and price lists of the 35 volumes; such lists can be had on application to the Secretary. Meetings of the Society are held every second Saturday from October to May at the Cosmos Club.

**SMALL TIMBER LOTS WANTED**

Mr. Frank J. D. Barnjum, of Annapolis Royal, N. S., writes: "I am willing to purchase a few small timber lots containing a good growth of pine or spruce trees in different parts of Nova Scotia, located either on our main highways or bordering on the line of a railway, for the purpose of

saving and perpetuating some of the present forest tree growth. These lots will never be cut over, nothing but the over mature or dead or blown down trees being removed from time to time as becomes necessary, keeping them in perpetual forest growth, under the care of a competent forester, thus serving the four-fold purpose of an example in scientific forestry, a picnic ground or Forest Park for the people as well as an oasis in the landscape and a reminder of the beautiful forests that once existed in this province."

Address Mr. Barnjum, giving size, location and price of lot.

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AND 32 NATIONAL MONUMENTS

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Peak-to-Peak and 40 other short scenic auto trips. Motor, camp, fish, enjoy outdoor sports. Live as reasonable as at home, or as expensive as you wish.

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Rocky Mountain National Park.....	\$10.50
Denver Mountain Parks, \$4 and.....	5.00
Never-Summer Range (2 days).....	25.50
Echo Lake—Mount Evans.....	8.00
Arapahoe Glacier (all expense).....	15.00

**ONE DAY RAIL TRIPS**

Georgetown Loop.....	\$3.55
Royal Gorge.....	11.64
Platte Canon, \$2.00 to.....	5.40
Moffatt Road.....	5.00

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# CANADIAN DEPARTMENT

## By ELLWOOD WILSON

The Forestry Department of Ontario has decided to make an aerial reconnaissance of its unexplored northern territory during the coming season and will spend at least 300 hours in sketching and photographing the timber resources of this little known region. More than anything else we have needed some accurate estimate of the timbered areas and the relative amount of timber on them and this will give some definite information on which a sound policy can be based. So much guessing has been done and so little accurate data has been at hand for timber estimates that the public have not known who to believe, the man who said our resources were inexhaustible or the man who said that we are on the verge of a timber famine. The amount of flying mentioned above should pretty well cover Northern Ontario during the coming season. Much credit is due Mr. Zavitz for his progressiveness and courage in trying out this new method on a large scale.

The Forestry Division, of the Laurentide Company, Ltd., has just succeeded in working out a method for getting the density of stocking of timbered areas from aerial photographs and can now get a much better and more accurate estimate of timber from these pictures than can be obtained from the ordinary ground cruise and do it in a fraction of the time and at much less expense. It has also worked out the way in which logs lie in a boom and can get a close estimate of the number which lie in a holding boom from an aerial photograph.

Mr. F. J. D. Barnjum, of Annapolis Royal, Nova Scotia, who is working for better forestry in Canada, has just added to his offer to farmers who plant trees in that Province, a number of prizes in his endeavor to encourage reforestation of land suited for growing trees. This is a very public spirited offer and should do a lot of good in interesting people in forestry and fire protection.

The Canadian Forestry Association has asked the Governments of the Dominion and the Provinces to increase their grants, which have been given ever since the Association was founded. No better use could possibly be made of Government money than to aid the Association's propaganda for better fire protection and better logging methods and for planting. The Association has been the means of arousing public opinion in Canada for the above objects and has now behind it a solid body of disinterested opinion which will be of great help to all the Governments in framing sound and sane forestry policies.

The session of the Quebec Legislature, lately prorogued, has done splendid work in amending and amplifying the forest fire laws. The suggestions for these laws came from Mr. G. C. Piche, Chief Forester. According to the new law, if a fire starts on a man's land and spreads to adjoining property, he is assumed to have set it and is responsible for damage caused unless he can prove his innocence.

No saw-mill can be established within a mile of any timber limit or any Crown Land without the written consent of the Minister of Lands and Forests. There is a penalty of ten dollars per day and the judge can order the mill demolished. Any person who does not take the necessary measures to prevent a fire from spreading from his land to another property is liable to a fine of from \$25 to \$2,500. Persons who pile lumber, logs, pulpwood along a railway line must after it is removed clear up any debris left. All persons wishing to travel in the woods, whenever the situation warrants it, in the discretion of the Minister, shall be obliged to obtain a permit from the local fire-ranger. No charge will be made for this. Any person who is duly employed for the protection of forests from fire, may, in the course of his duty, enter upon and cross over any lands. Laws have also been passed in regard to bonuses for reforestation and for the establishment of Municipal Forests, but unfortunately these are only permissive, and no amounts are fixed as bonuses. The laws only say "which the Lieutenant-Governor-in-Council may be pleased to fix or to authorize." If one may criticize the situation in Quebec at all, one would say that the laws relating to forests are as good as any in the country and in many respects far ahead of other sections of this continent, but that the enforcement of them is, to say the least of it, rather lax. This is due to two things, lack of sufficient personnel of proper training, and the other the general disrespect of certain laws, forest and game laws for instance, common to all new countries.

The summer meeting of the Woodlands Section of the Canadian Pulp and Paper Association will be held in the second week in July and will consist of a trip, probably by automobiles, through the Adirondacks. The tentative program is a visit to the plantations of the Delaware and Hudson Railway near Plattsburg, the New York State plantations and nurseries at Lake Clear, Saranac Inn and Saratoga, the operations of the Emporium Forestry

Company at Conifer, New York, and the lookout station at Chestertown, New York. The trip will occupy nearly a week and will be very interesting and instructive.

The Conservator of Forests for Western Australia, Mr. C. E. Lane-Poole, has owing to difficulties with his Government over timber concessions, resigned his office and will go to Papua, New Guinea, to report on its forest resources. He was a delegate to the Imperial Forestry Conference and is a very able man and will be a great loss to Australia. His leaving is much regretted. He was a graduate of the Forest School at Nancy, France and had done good work in South Africa. He is succeeded by R. A. Gibson, Forest Conservator from India.

A shipment of seven hundred pounds of Douglas Fir seed has been sent by the Dominion Forestry Branch to Great Britain for use in its reforestation scheme. This completes a shipment of 4,000 pounds of Douglas Fir, 3,000 of Sitka spruce and 100 of Western Hemlock.

The first issue of the Empire Forestry Journal has just been received and is a very creditable publication. For the first year it will be issued three times a year.

It is announced that already twelve counties have taken advantage of the plan of the Ontario Government for assisting municipal forests. These counties have acquired blocks of non-agricultural land from 100 to 1,000 acres and these will, in co-operation with the Forestry Service, be reforested.

The Dominion Forestry Branch, will probably for the first time in forest protection history, displace a number of its ground patrolmen and use airplanes. By arrangement with the Air Board, five F 3 machines, each with a carrying capacity of seven men and pilot, will be employed under Col. Stevenson, District Inspector of Forest Reserves. The work in spotting and reaching forest fires last season was so successful that the work is being much extended.

British Columbia will also use seaplanes in its fire protection work this season and many experiments will be tried, such as transportation of higher departmental officials to large fires, also expert fire fighters, transferring fire fighters from one fire to another, etc.

The nursery of the Dominion Forest Service will ship seedlings and cuttings for shelter belt planting in larger quantities than ever before, this year. Up to date sixty million trees have been sent out.



# How Manufacturers Reduce Cost of Building 15%

*The Application of Mill Construction to Factory Building.  
Also Reduces Carrying Charges, Taxes, Insurance*

**M**ANY a business man has, in the last twelve months, come to realize the true meaning of costly factory buildings.

Extravagant building investments, entailing high, fixed overhead, are proving an almost insurmountable handicap in the present intensely competitive period.

A big price to pay for yielding to fear of fire, instead of investigating the causes of fire and the real facts of fire protection.

And entirely unnecessary when the application of a single established principle of commercial building construction, coupled with adequate sprinkler protection, might have saved them 15% on building investment, 15% on interest carrying charges, a considerable amount on taxes and as much as 75% on actual insurance costs.

**N**O wonder industrial executives are, more and more, figuring necessary industrial building in terms of fire resistant, sprinklered "mill construction."

They are finding that insurance rates are much lower than on so-called fire-proof buildings, unsprinklered, while the rate is, at the same time, applied on a lower valuation.

It is, after all, not buildings so much as contents that consti-

tute fire hazard; and trying to reduce fire hazard by increasing building investment only piles up the overhead, and unnecessarily increases costs.

Engineers and architects, long familiar with the principle of fire-resistant, sprinklered "mill construction," yet obliged to limit its use because of lack of sufficient uniformly safe timbers with which to apply it, are now unhesitatingly recommending it.

**M**ANUFACTURERS who have assumed that so-called fire-proof building is necessary to lower insurance rates are surprised to discover that thousands of the greatest mills in the country—sprinklered "mill construction" buildings, in which brick and wood have been intelligently combined into factories of great utility and adaptability—are paying today lower insurance costs than almost any other class of insurance risks and that their losses over a recent three-year period have averaged only 3½ cents per \$100.00 of insurance written.

*Let us make every day  
"Fire Prevention Day"*

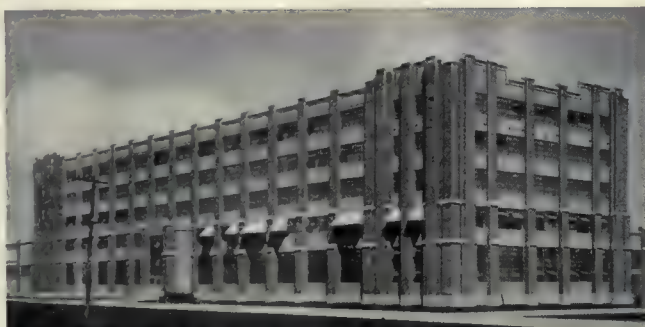
Timber values are no longer a matter of guesswork.

The work of testing engineers, scientists and lumber experts, extending over a period of years, now makes possible the selection of timbers for "mill construction" based on uniform values.

**I**T is now possible to secure selected timbers for the most exacting industrial uses from the Douglas Fir Mills of the Weyerhaeuser organization or from its great distributing plants in the heart of the Eastern and Mid-western markets.

Just what the principle of fire-resistant, sprinklered "mill construction" is as applied to commercial buildings, and just why Weyerhaeuser selection of timbers now makes this principle practical of application, is told in two booklets sent free on request.

Weyerhaeuser Forest Products are distributed through the established trade channels by the Weyerhaeuser Sales Company, Spokane, Washington, with branch offices at 208 S. La Salle St., Chicago; 1015 Lexington Bldg., Baltimore; and 4th and Roberts Sts., St. Paul; and with representatives throughout the country.



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# BOOK REVIEWS

*Handbook of Field and Office Problems in Forest Mensuration*, by Hugo Winkler and Elias T. Clark. (Wiley), New York, Price \$2.00.

This is a revised and enlarged edition of the original book, first published by the authors in 1915. It is designed especially for the needs of the student, the teacher and the practical man who desires detailed information on cruising, scaling, volume tables, and a knowledge of the growth and yield of trees. From a practical and educational standpoint the book presents many special features and is especially adapted for use by schools having either good or poor facilities for field demonstration, as the comprehensive Appendix lists a great deal of data with which to solve the problems. The contents include: Preliminary Measurements; Use of Graphic Methods; Log Rules; Preliminary Calculations; Construction of Volume Tables; Scaling; Determination of the Contents of Stands; General Growth Studies; Sample Plot Studies; Studies in Growth Per Cent; Yield Table Studies and, the Appendix, A Diagram for the Correlation of Methods in Forest Mensuration.

*Studies of Trees in Winter*—Annie Oakes Huntington. (Page), Boston, \$3.50.

Generously illustrated with color plates by Mary S. Morse and photographs by the author, this book is an interesting and valuable one, containing a description of the deciduous trees of Northeastern America in their winter dress. The key for identification is based largely on the contrasting characters of the buds, leaf scars and stems, which always mark the safest and surest course for those who wish to study and know the trees, and winter is surely the best time to acquire such knowledge. In his introduction to the book, Dr. C. S. Sargent of the Arnold Arboretum says: "A knowledge of trees, the ability at least to recognize and identify them, adds vastly to the pleasures of life. One who knows trees well meets them like old friends; each season invests them with fresh charm, and the more we study and know them the greater will be our admiration of the wonderful variety and beauty which they display in winter."

*Birds of Field, Forest and Park*, by Albert Field Gilmore. (Page), Boston, \$2.50.

Designed to stimulate among its readers a desire to make the acquaintance in the open of the birds it describes, this book certainly meets its own requirements. It is in no sense a treatise on ornithology, but is the more valuable in that it reproduces the atmosphere of the natural home of the bird in field, forest and park by describing the conditions under which each variety is found as well as their habits,

plumage, songs, etc. About one hundred and fifty varieties are described, including those most common in eastern North America. Latin names are avoided in its phraseology, as well as the purely technical terms which are unfamiliar to the layman. The volume contains the result of the author's actual observations of bird life covering a period of more than thirty years.

*American Forest Regulation*, by Theodore S. Woolsey, Jr., \$2.75, (Paper), \$3.00, (Cloth.)

A limited edition of this book is now ready for distribution and can be had by applying to the American Forestry Association, 1214 Sixteenth Street, N. W., Washington, D. C., or direct from the author at 242 Prospect Street, New Haven, Connecticut. The volume contains an introductory note by Dr. B. E. Fernow, and thirteen chapters, as follows: Introduction to Forest Regulation; Background of a Regulation Policy and Sustained Yield; Management and Administrative Subdivisions; Rotations—Technical, Silvicultural, and Economic; Financial Rotations; The Normal Forest; Regulating the Cut; Volume Methods of Regulation; Area and Area-Volume Methods of Regulation; The Cutting Cycle as a Determining Influence in American Forest Regulation; The Application of Regulation to American Forests; The Problem of Sustained Yield; Regulation of Forests Composed of Even-Aged Stands. Chapters 10 to 13 are by Professor Herman Haupt Chapman, of the Yale Forest School. The Appendix covers: A. (a) Forest Management in Nine European States (after Martin); (b) Financial Rotations (after Endres); B. Growing Stock and Yield, Harvard Forest; C. Example of a Preliminary Policy Statement for Inyo National Forest; D. Results of Forest Management in Savoie, France; E. Examples of Yield Calculations from National Forest "Management Plans," 1921.

*Interesting Neighbors*, by Prof. Oliver P. Jenkins. (Blakiston's), Philadelphia, \$1.50

This book contains sixty-two nature stories for boys and girls—the sort of stories that small boys and girls relish so keenly. Prof. Jenkins writes of bees, bats and butterflies; of birds and flowers, even of toads, and whatever he touches he makes real and full of understanding. Nature gives to every time and season some beauties of its own which become a part of the life and experience of every child. Natural objects themselves, even when they make no claim to beauty, excite the feelings and curiosity of the young and occupy the imagination. The child mind is not educated by argument, but by

events, and Nature pleases, attracts, and delights while she instructs.

*Watched by Wild Animals*, by Enos A. Mills. (Doubleday, Page & Company), Garden City, \$2.50.

Replete with descriptions of nature characteristic of Mr. Mills' enthusiasm for his subject, this book appeals strongly to all admirers of animals, nature and good writing. The author says that when you go out purposely to observe wild animals in their native haunts, you are watched a great deal more than you watch. Almost invariably, he says, he has found animals' tracks in his wake as he traversed wild country, and through other signs known to the woodsman, he has known that the animals have been spying upon him, and he tells about it in his own inimitable way.

"The Valuation of American Timberlands," by K. W. Woodward. (Wiley), New York, \$3.00.

A study of the factors involved in estimating timber values is made by Prof. K. W. Woodward, head of the New Hampshire College forestry department, in a volume entitled "Valuation of American Timberlands," which has just been published. The book was written to supply information of practical value to investors, timber cruisers and students of forestry throughout the country.

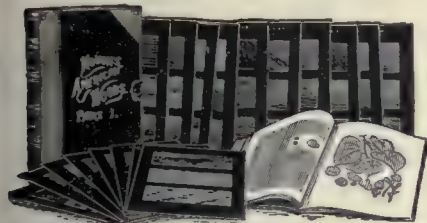
Professor Woodward's book represents one of the few attempts that have yet been made to gather in one volume descriptions of the forest types of the United States and its outlying territories. The author draws not only upon his knowledge of New England forest conditions but upon a previous service with the United States Forest Service and a wide acquaintance with woodsmen over the country in depicting types of trees which range from the northern spruce, hardwoods and white pine of New England to the cypress of the Southern bottomlands, the chapparal of Arizona, the redwoods of the Pacific coast and the dipterocarps of the Philippines.

*Agricultural Conference Report* — The report of the National Agricultural Conference as made by Secretary of Agriculture Wallace to President Harding is to be issued as a public document. President Harding transmitted the report to the agricultural committee of the House, which presented it to the House with the recommendation that it be printed as a public document. The House approved the recommendation. The publication will contain the addresses delivered before the conference and the reports of the various committees. Persons who are interested may obtain copies of the document through their congressmen.



## HOUGH'S AMERICAN WOODS

A publication illustrated by actual specimens (showing the end, "quarter," and "flat" grains of each wood) with text telling uses, properties, distributions, etc. Send for samples of the specimens and announcement.



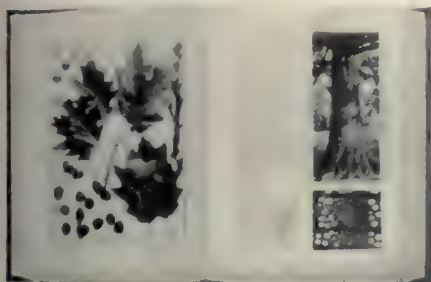
A volume of American Woods displayed. The plates containing the specimens are separable, to facilitate examination, and go with the text into the clasped book-like cover.



The Elliott Cresson medal awarded to the author of "American Woods" on account of its production. This is the very highest of testimonials to its value.

## HOUGH'S HANDBOOK OF TREES

Photo-descriptive and enables one to identify the trees at any season of the year by comparison with its photographic illustrations. Send for sample pages and announcement.



The Handbook opened at Red Oak. Two pages facing each other are devoted to a species. Observe the scale of measurement in the background of the left page, to indicate natural sizes, and map (showing distribution), wood-structure, and bark characters on right page. These are exclusive features of this book.

"Nothing but praise for the work."—*The Nation*.  
"Extraordinarily thorough and attractive. Its illustrations almost carry the scent and touch of the original."—*New York Times*.

"It is doubtful if any book placed before the public in recent years possesses the peculiar charm of this Handbook."—*St. Louis Lumberman*.

"The most valuable guide to its subject ever published."—*Springfield Republican*.

"No other book can take the place of this masterly production. When you have seen it you will wonder that it is so inexpensive."—*Journal of Education*.

We have also a choice line of Mounts of Woods for Lantern and Microscope, Tree Studies for Lantern, etc.

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## Marshall Jones Books

### HISTORIC TREES OF MASSACHUSETTS

By James Raymond Simmons

Trees have ever been connected with human history. Massachusetts has more historic trees than any other State in the Union. Some were standing before the Pilgrims landed and still survive. All of them are described and many of them shown in the beautiful illustrations of this book. There is a map of value to motor tourists in visiting their historic sites. \$4.00.

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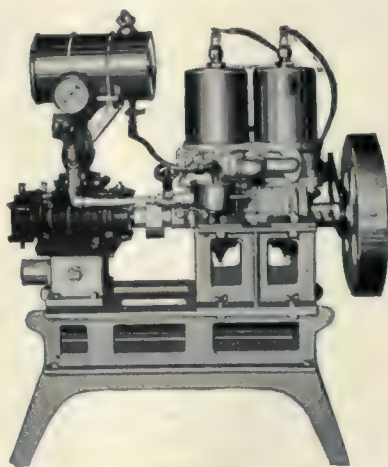
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## PRUNING OF SHRUBS

"The majority of home owners are not  
much concerned about selecting the right  
spots for planting, choosing the right kind  
of shrubs, getting the best stock and plant-  
ing it in a careful manner," says Prof. Alan  
F. Arnold of the New York State College  
of Forestry at Syracuse University. "After  
the shrubs are in the ground, however, their  
owners exhibit a painful amount of solici-  
tude for them and this is expressed par-  
ticularly in the practice of shearing them  
back to a flat top every year—giving them  
a 'haircut.' This is a most unfortunate  
practice horticulturally and aesthetically.  
Many people who vigorously condemn the  
telephone companies for lopping off sec-  
tions of nice trees, perform the same opera-  
tion on their own shrubs and think they  
have done well.

"The practice of cutting off the tops of  
shrubs has many disadvantages. In the  
first place, it renders them ugly; the value  
of a shrub largely lies in its beauty of  
outline, the grace of its branches and the  
delicacy of its twigs, and these are lost  
if it is given a top like a table instead of  
like a growing plant. Next, the shearing  
destroys the individuality of the plants;  
there is little use in having a variety of  
shrubs, or the variety that there may be in  
different members of the same species, if  
they are to be reduced to sameness once  
a year by a pair of shears. Again, the plant  
is apt to be robbed of the best part of its  
bloom; the majority of our ornamental  
shrubs bloom on branches which have  
grown the year before, and if these are  
largely cut off in late winter or early spring,  
the possibility of flowers is cut off with  
them.

"It is difficult, if not impossible, to make  
rules for pruning shrubs, if one had to  
make a rule, however, a vastly better one  
than that which calls for an annual 'Hair-  
cut,' would be 'Don't do any pruning at  
all.' Some use of the shears is, however,  
often desirable. It may be to keep within  
bounds a shrub which is getting too high,  
or encroaching on a walk, or a flower bor-  
der; or to give a better appearance to some  
of the shrubs whose habits or growth are  
not of the best; or, simply to remove  
dead branches. Pruning is also often re-  
sorted to for finer and larger flowers. In  
the case of a few shrubs, notably lilacs,  
a little cutting is a good thing for the  
bloom; if it is a case of severe pruning—  
such as is given to roses—the shrubs had  
better be grown in some special spot, not  
in the ordinary shrubbery bed where gen-  
eral all round attractiveness of the plants  
is wanted.

"The sort of pruning to do and the time  
to do it depend on the kind of shrub and  
what is expected of it. Occasional bits of  
pruning, such as the removal of some dead  
wood or an obstructing branch, can be done  
almost any time. Pruning to improve the



bloom should be done, in the case of spring blooming plants, immediately after flowering; in the case of later blooming shrubs, in late winter or early spring. The first thing to do, however, is to become familiar with the different shrubs and to know what effect can best be secured with them; then a judicious use of the pruning shears will be of benefit."

#### WILL REFORESTATION PAY?

W. H. Johnson

The Columbus Dispatch, Columbus, Ohio.

The writer was born on a hill farm of southeastern Ohio. Through that farm into the Ohio river ran a deep ravine, with steep rocky sides. Among my earliest memories are some immense tulip poplar trees, standing along the sides of that ravine, but cut and sold for "keg wood" while I was still a little boy. Today the sides of that ravine, too steep for agricultural use, are grown up with a tangle of trees, and shrubs and vines which make splendid bird and game shelter, but there is almost nothing of any economic value aside from that. In wandering through it recently, however, I was struck by the sight of perhaps a dozen fine young tulip poplars, very straight and tall, as they reached up for the light between those two hill-sides.

Now in that stretch of useless ravine, through one not very large farm, there might have stood today at least 200 of those poplars, 50 years of age, if at the time when the original timber was cut, the owner had foreseen the possibilities, incurred the comparatively small expense of planting them, and given them the little care which they would have needed as the years went by. And can anyone doubt that if that ravine contained 200 tall 50 year old poplars today, the whole farm of about 160 acres would have a sale value enough higher for that reason to yield a better profit by far than has been secured from any other investment of equal amount that has been made on the farm during the fifty intervening years?

The farm in question originally had much black walnut on it, some of which was split into fence rails and some burned in great log heaps to clear the ground for tillage. At least half of its acreage is better adapted to forest than to any other possible use; and that farm is typical in this respect of much of the so-called farm lands in that section. There are large tracts which should be acquired by the state, and a very small beginning in that direction has now been made. But it would be a great economic blessing to the whole state if the "farm wood-lot" idea could once get the proper lodging in the minds of individual



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owners—if they could only be made to see that the gradual transformation of 10, or 20, or 50 acres of worthless hillside thick-et into valuable timber would give the whole farm a better sale value with each decade of the process, up to the time when actual harvesting of the timber should begin. How to popularize this truth, and set thousands of farmers to acting upon it, is one of the greatest forestry problems of today.

#### THE NEBRASKA FORESTRY ASSOCIATION

The wide and enthusiastic interest in forestry in Nebraska has culminated in the formation of a state forestry association, which was finally organized in March. T. W. McCullough, of Omaha, is president; Woodruff Ball, of Valentine, long identified with forestry in Nebraska, is vice-president, and Mrs. J. H. Corrick, of Palisade, is secretary. Hopes for success and real achievement go with the infant organization in its stated program to stimulate planting in Nebraska, and an appreciation of forestry and what it means to the people of the state.

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Membership  
In The Association



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### MORE FORESTERS NEEDED

More technically trained men are needed in government forestry work is the statement of District Forester George H. Cecil of Portland, Oregon, in calling attention to the special examinations held the latter part of March for forest assistant and grazing assistant throughout the western States.

"The spread of the forestry idea throughout the United States during the past few years," said Mr. Cecil, "has been most marked. The creation of two new forest experiment stations by the federal government during the past year and the introduction of bills in Congress for several more stations, as well as the widespread interest being manifested in the two general forestry bills now before Congress, are an indication that the country as a whole is realizing the seriousness of the forest problems of the country.

"These problems call for an early solution and here is an unparalleled opportunity for trained foresters, whether they enter government work or whether they become associated with lumber associations, as logging engineers with lumber compa-

nies, or with pulp and paper concerns, or whether they enter the teaching field."

### FIGHT IS CONTINUED

Although the Agricultural Appropriation bill which recently passed the House of Representatives, did not carry an appropriation for the establishment of a Forest Experiment Station in the Lake States and since the bill to establish such a station was killed by the Appropriations Committee, a bill has just been introduced into the Senate by Senator Townsend of Michigan to establish such a station and it is hoped that it will be added to the Agricultural Appropriation bill in the Senate.

Sentiment for the establishment of such a station is keen throughout the Lake States, particularly in Michigan. Numerous civic bodies, trade associations, and agricultural organizations have passed resolutions favoring its establishment. The Northern Hardwood Manufacturers Association composed of Michigan and Wisconsin lumbermen resolved in favor of the bill at its recent meeting. The Michigan Hardwood Manufacturers Association instructed its Forestry Committee to take necessary action in regard to the bill. The entire membership of the Committee has individually expressed itself favorably in regard to it.

In Michigan alone three different lumbermen have made offers of land, the total aggregating over 1,000 acres, to the Government in case a station is established in the State.

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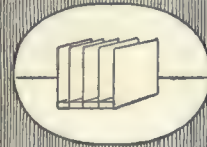
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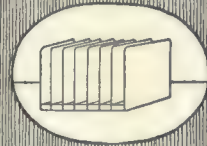
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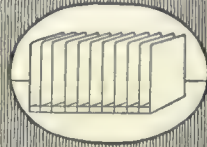
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## ATTENTION, FORESTERS

AMERICAN FORESTRY will print, free of charge in this column, advertisements of foresters wanting positions, or of persons having employment to offer foresters. This privilege is also extended to foresters, lumbermen and woodsmen who want positions, or to persons having employment to offer such foresters, lumbermen or woodsmen.

### POSITIONS WANTED

**GRADUATE FORESTER**, 15 years experience in Practical Forestry and Park work, with good working knowledge in the cutting and removal of timber, Fire Protection, Planting, Pruning and Care of Trees and Shrubs, etc., desires position with private company or on an estate. Address Box 3075, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (3-5-22)

**YOUNG MAN**, Age 23, ex-service man in the field artillery, desires employment in some branch of forestry or as a ranger, guard, etc. Address Box 3088, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (3-5-22)

**WANTED**—Positions by three High School Graduates for forestry work or woods work for the summer. Salary or location no object. Experience wanted. Box 3085, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (4-6-22)

**GRADUATE LANDSCAPE FORESTER**, experienced in both municipal and private forestry and landscape engineering desires position with a municipality or private concern. Address Box 3095, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (4-6-22)

**"LAND OWNERS**, are your holdings burdensome? Perhaps there is a better way of getting an income from them or turning them into cash than has yet occurred to you. It will cost you nothing to talk your troubles over with a **LAND SPECIALIST**, temporarily unemployed, with 25 years' experience at lumbering, forestry, farming and agricultural organization in the Northwest. Write description of location, topography, soil, etc., in reply. Box 4010, care AMERICAN FORESTRY MAGAZINE, Washington, D. C.

**FORESTRY COLLEGE GRADUATE**, 22, single, willing and capable, wants work with a forest products company or a research party. Not particular which part of world duties will lead to. Address Box 4000, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (5-7-22)

### WANTED

**WANTED**—A graduate forester of four or five years' experience. Eastern preliminary education preferred. Good salesman, excellent talker. To do educational extension work. Address Box X-22, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (4-6-22)

**WANTED**—**FORESTERS AND RANGERS** to act as District Superintendents and book orders for fruit and ornamental trees, evergreens, shrubs, etc. Pay weekly. Complete equipment. State territory desired. Full or part time. Address Box 3090, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (4-6-22)

**FORESTERS, UNEMPLOYED OR EMPLOYED**, having executive ability and possessing the gift to lead others, to write us. Great opportunity for those that qualify. State age, reference—(2) if employed. School graduated from (years). Confidential. Rangers also answer this. Address Box 66-66, AMERICAN FORESTRY MAGAZINE, Washington, D. C.

### ROTARY CLUB PLANTERS

The Rotary Club of Lake Charles, Louisiana, for the last two years has had as one of its activities the popular distribution of trees in the city and parish. The first year the club distributed some 350 trees, practically all live oaks. This spring the club distributed about 1300 trees of various species and the movement has met with a great deal of favor.

This practice was inaugurated by R. M. Hereford, chairman of the tree committee both seasons. It is now the intention to install a tree planting nursery of some three or four acres, securing seeds of various shade and nut trees for planting and

also to secure small trees to be planted in the nursery, where they will be permitted to grow large enough for distribution.

### FREE GUIDE SERVICE IN PARKS

From the Swiss Alps and the fjords of Norway has come the germ of the nature guide movement which is proving such an attractive feature to the hundreds of thousands of visitors to the National Parks. The first experiments in nature guide work in this country were conducted by the California Fish and Game Commission in Lake Tahoe resorts, California. In 1920 the nature guide service was commenced in Yosemite National Park in co-operation with the National Park Service and proved tremendously popular with visitors. Over 27,000 visitors made use of the service, which is given without charge of any kind. In 1921 the Yosemite Nature Service served over 50,000 visitors and somewhat similar service was furnished visitors in Yellowstone Park. This year the free nature guide service will again be available in Yosemite and Yellowstone Parks and will be installed for the first time in Glacier National Park. The nature guides give lectures and camp fire talks and conduct visitors on nature study field excursions. Anyone puzzled regarding birds, animals, insects, wild flowers, trees, or natural curiosities or features of the parks may obtain information about these without charge by applying to the park nature guides.

### PROTECTION WEEK IN PENNSYLVANIA

Governor Sproul, of Pennsylvania, issued a special proclamation urging the observance of Forest Protection Week throughout the state, asking that the "Citizens of the Commonwealth exercise the greatest care with fire in or near woodlands during this period of fire danger; that those citizens whose occupation or movements require the use of fire in the woods take the utmost precaution to prevent the spread of fire; and that every citizen of the state cooperate in eliminating the forest fire evil, to the end that the Commonwealth may enjoy a perpetual forest heritage and all the blessings of prosperity that flow from it."

### NO ADVERTISING SIGNS IN CALIFORNIA'S FORESTS

Advertising signs in the 17 National Forests of California have come down, following an order issued by the district forester at San Francisco on January 27. Advertisements printed on rocks and trees are also to be effaced. According to the regulations of the Forest Service of the United States Department of Agriculture, such advertising is prohibited in all National Forests without special permits, which are seldom issued. The object of this regulation is to prevent defacing the mountain landscapes of the National Forests with billboards and other unsightly signs.



# AMERICAN FORESTRY

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## CHANGE OF ADDRESS

A request for change of address must reach us at least thirty days before the date of the issue with which it is to take effect.  
Be sure to give your old address as well as the new one.

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# "THE HALL OF FAME FOR TREES"

## THE NEW GARDEN OAK



### "UNCLE JOE'S" GRANDFATHER WAS BURIED BENEATH THIS FAMOUS TREE

The New Garden Oak is nominated for a place in the Hall of Fame of the American Forestry Association by Mark C. Mills, of Guilford College, North Carolina. In nominating the tree Mr. Mills tells the Revolutionary history that was made near the tree and adds that the grandfather of Joseph G. Cannon is buried near it. Congressman Cannon was born at Guilford May 7, 1836. In his letter of nomination Mr. Mills says:

"After the battle of Guilford Court House, fought March 15, 1781, near what is now Greensboro, North Carolina, both General Greene and Lord Cornwallis withdrew, leaving their wounded. These were cared for by the people of the Quaker settlement of New Garden, which centered around the New Garden meeting house, four miles and a

half southwest of the battleground. The Quakers then as now were peace-loving people, but they hastened to care for the wounded of both armies. As the mortally wounded died they were buried in the shade of what is now a magnificent old white oak. Here in recent years has been erected a simple monument to the memory of the wounded of both armies who died and were buried there.

"New Garden meeting of Friends still exists and the modern meeting house stands on the campus of Guilford College, the first co-educational college in the South. The New Garden oak is a wonderful old tree and around it are buried scores of the pioneers of Revolutionary days, among others the grandfather of Joseph G. Cannon."



# AMERICAN FORESTRY

VOL. 28

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NO. 342

## THE PASSING OF AN INDUSTRY AN EPIC OF THE GREAT AMERICAN FOREST

By E. G. Cheyney

Professor of Forestry, University of Minnesota

THE Ages of Stone, of Bronze, and that of Steel have been written up in prose and verse in every civilized country of the world, but the Age of Wood, one of the most amazing phenomena in economic history, lies buried and unrecorded in the haze of a too recent past. And yet the tale of how a mighty industry was born in the struggling colonies of New England, swept like a scourge from ocean to ocean across the vast North American continent and almost died on the Pacific Coast, all within

the memory of men now living, forms one of the most remarkable stories in the development of an altogether remarkable nation. Only those who have made an intimate study of our economic growth can ever know how much our prosperity has been dependent upon wood.

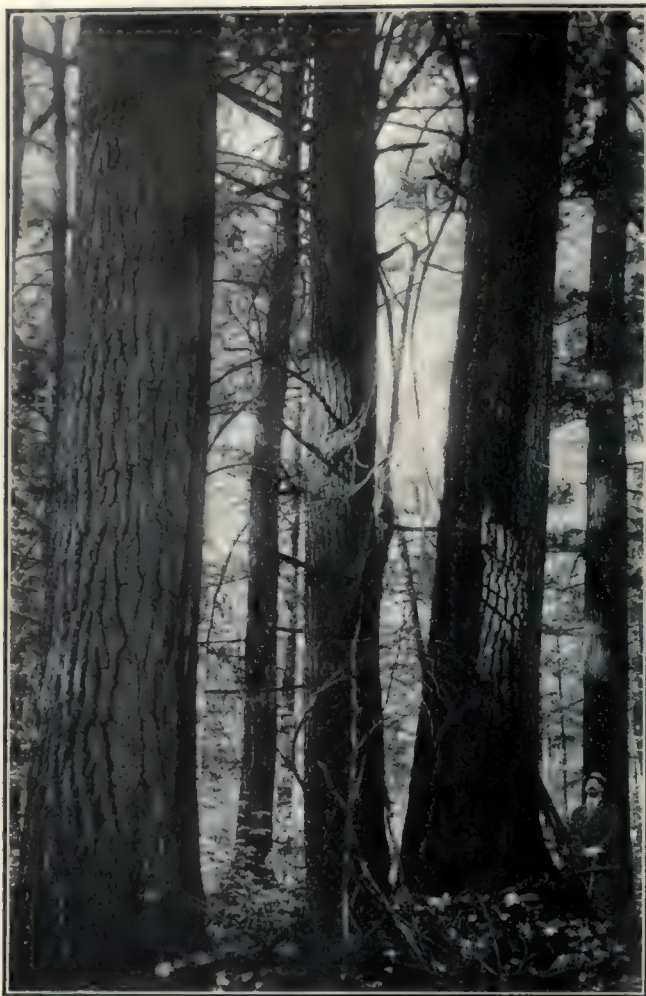
The seventeenth century was a period of violent ferment throughout all Europe. The tyrannical governments of that time were wholly absorbed in their thirty years' war, which was only a convenient term for design-



Courtesy of Goldwyn Pictures

THE FOREST PRIMEVAL—RICH HERITAGE OF A CONTINENT





AS THE COLONISTS FOUND IT—VIRGIN WHITE PINE  
AND HEMLOCK

nating a certain section of the almost continuous war which cruelly oppressed the people for several centuries. A war of kings, into which the people were thrown without voice of protest or knowledge of cause or object. War had been so completely the occupation of the nations for so many years that economic, social and moral structures had fallen into utter ruin.

Property was so closely concentrated in the hands of a few, and the tyranny of that few was so absolute, that mere life for the peasant had become a matter of painful uncertainty and at best a possession of doubtful value. To him all of the necessities of life were rare luxuries and none more rare than the products of the forest. In that once heavily timbered country the remnant of the once vast forests had become a taboo hunting ground for the pampered noble, an accursed place where men were incontinently hung to the nearest trees for the snaring of a rabbit and where women froze to death in the midst of the wood, that his Grace's roebuck might not be disturbed.

Restrictions met burgher and peasant alike at every turn. May-poles were forbidden; all baking had to be done in common ovens, and the people of one town might not have their bread baked in another unless they

brought their wood with them; people were buried in canvas bags to save the wood of a coffin; a green bush hung in front of an inn—the immemorial symbol to advertise the sale of liquid refreshment—was no longer permissible; the manufacture of charcoal and potash was narrowly restricted or stopped altogether. To have what little wood one could not get along without was to be rich.

Such, in brief, were the unbearable conditions of an intolerant and bigoted Europe at the time that a few courageous but desperate spirits threw their little all recklessly out upon an uncharted sea in the forlorn hope of finding relief from persecution and the wherewithal to live in the little known country of America.

The first thing that these same wood-starved people saw when the cry of land sent a thrill of hope through the little band of well-nigh despairing voyagers, was the rim of a mighty forest, of such a forest as they had never visualized in their wildest dreams or their loftiest flights of imagination. Unbroken it met their gaze as far as the eye could reach. And no matter where they chose to land it was always the same; whether it was the French in Canada, the English at Plymouth, Jamestown or Philadelphia, the Dutch at New Amsterdam or the



TO THE COLONIST THE FOREST OFFERED A HOME—  
BUT HE HAD FIRST TO SUBDUE IT BY CUTTING



Spaniards in far away Florida, always the unbroken forest, different in species, perhaps, but a forest just the same, dark and impenetrable.

A terrible forest it was, and threatening, too, in spite of its enormous potential worth, for from its jealous grasp these small but courageous bands had to wrest their meagre little farms and in its dark recesses were hidden the savage tribes which were to menace their very existence for a century or more. And a stout and stubborn enemy it proved to be. Many a one of their number slept the long sleep,



Courtesy the Lehigh Portland Cement Company  
ANOTHER STAGE IN OUR NATION'S DEVELOPMENT—WHEN WILLIAM PENN MADE HIS NOTED TREATY WITH THE INDIANS IN 1662, IN THE SHADE OF THE FRIENDLY OAK.

leaf-covered, in that silent forest before it was conquered and its original owners put to flight or reduced to ignominious servility.

Capt. John Smith, the most famous explorer of those early days, traveled back up some of the rivers for at least a hundred miles without finding the limit of those forests. So far as they

could tell the forest stretched on in unbroken stands to the far away Pacific, wherever that might be. Probably Daniel Boone and some of his intrepid forest runners who penetrated the Bloody Ground beyond the



WHITE PINE IN PENNSYLVANIA—SUCH FORESTS PROMISE TO BE A CURIOSITY TO THE CHILDREN OF THE NEXT GENERATIONS





THE WOODEN SHIP OF EARLY DAYS WAS THE FORE-RUNNER OF OUR MIGHTY NAVAL AND MERCANTILE MARINE.

mountains and found the Blue Grass region of Kentucky, were the first to bring back the news of an open country. But that was more than a hundred years after the first settlers had come, and long after the success of the enterprise was well assured. Many of these colonists had come with dreams of gold and vision of fabulous wealth and great fortunes lying ready to be plucked, and they found instead—a forest. Wealth indeed, far greater than the fortunes of their dreams, but so abundant that its real value was lost to view, and so beset with thorns that its plucking seemed an ill paid task.

Small wonder that these poor, wood-starved children from an all too closely restricted home should have become reckless spendthrifts in this forest land!

Before a man could build a home, plant a garden or seed his little patch of Indian maize he had to cut the timber. Whether he would or no, each man was forced to be a lumberjack. No matter what high station he was destined to fill later on, he had first to be a lumberjack that he might live. The finest timber of the Eastern continent was his for the taking, but who was there to buy when all would sell? And yet, he who would buy must sell, and these

struggling colonists continually found themselves in dire need of many things from the old country. He found little of the gold of his dreams, but the timber was there, untold acres of it, and none knew better than he that timbers were needed in his old time home across the sea.

So it was that the export trade of what would some day be the United States began with the shipment of the finest unblemished white pine deals that ever grew and great hewn planks of unknotted oak. The deals were bulky and the ships from home were few and far between, but such as came were quickly filled and in return they brought the colonists the wherewithal to live. Within twenty years of the landing of the Pilgrims the first sawmill in America was buzzing in the great white pine forests of Massachusetts—if, indeed, a jigsaw run by an overshot waterwheel may be said to buzz—and the mightiest timber industry the world has ever known was under way.

It was a small beginning—for buyers were few and hard to reach. But it was a beginning and it grew. When all of a man's time was no longer needed to wrest from the stingy soil a mere existence, specialized trades grew up, and with the development of these trades came the inevitable barter of products, the growth of domestic commerce. Wood was by far the most plentiful of the colonial commodities and therefore the cheapest. Hence



PURE HEMLOCK IN NEW YORK—TO WHICH STATE THE CROWN OF LEADERSHIP PASSED FROM NEW ENGLAND ABOUT 1840, DUE TO HER GREAT PINE AND HARDWOOD FORESTS, HER CANAL AND RAPIDLY GROWING RAILROADS





NEW YORK'S SUPREMACY WAS SHORT-LIVED, AND THE LEADERSHIP PASSED TO PENNSYLVANIA ABOUT 1850, ONLY TO BE LOST AGAIN TO THE LAKE STATES IN 1870

UPPER—LOGGING MICHIGAN'S MAGNIFICENT WHITE PINE—A TRAIN LOAD ON THE WAY TO THE RIVER

LOWER—NORTH MICHIGAN LOGS—JUST A SLIGHT INDICATION OF MICHIGAN'S ENORMOUS OUTPUT





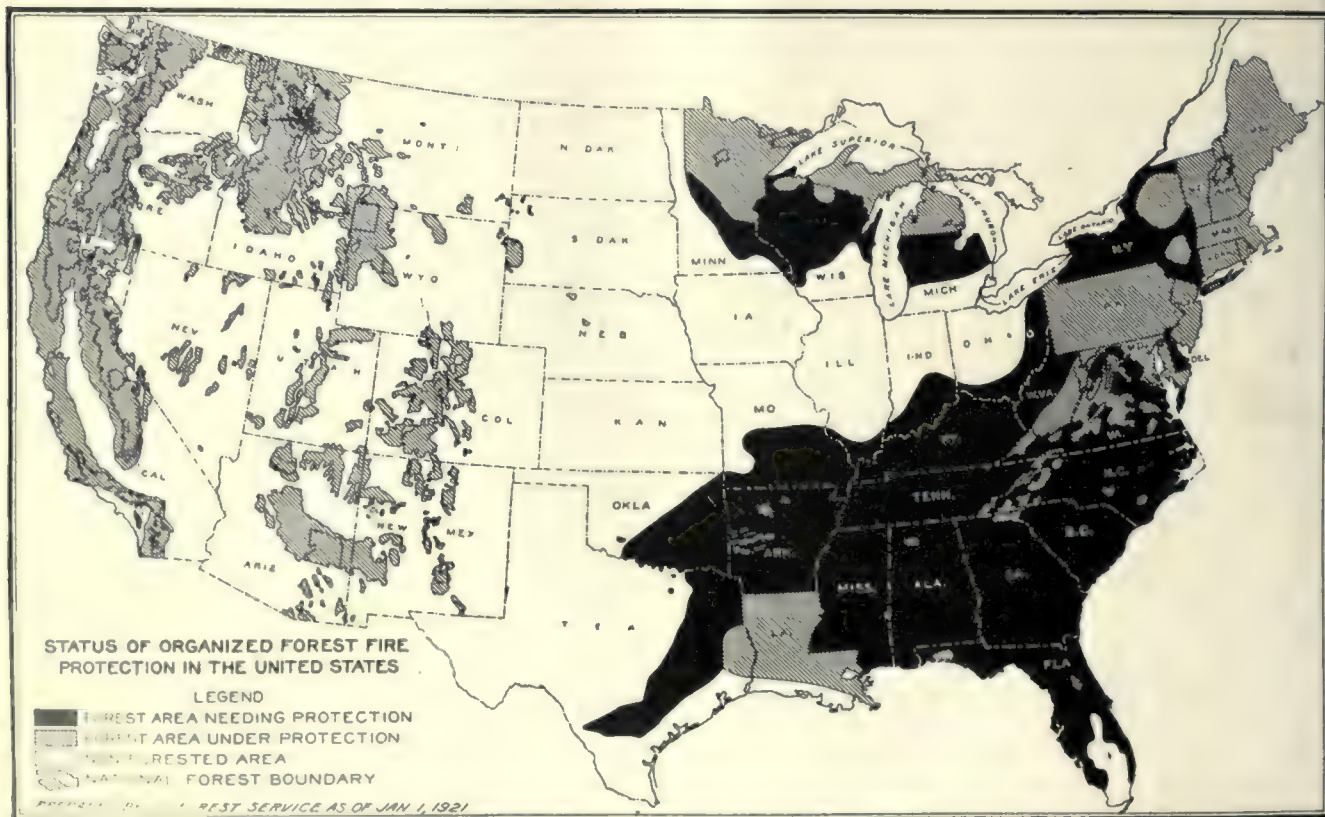
"BURNED TIMBER BUILDS NO HOMES"—THE RESULT OF FIRE AND ITS RAVAGES—SO OFTEN OCCASIONED BY CARELESS LUMBERING METHODS AND CONTRIBUTING LARGELY TO THE DECLINE OF THE LUMBER INDUSTRY IN ONE SECTION OF THE COUNTRY OR ANOTHER.

the Age of Wood. Ships for the transportation of wood and other things across the sea were scarce and hard to get, but ships were made of wood in those days and wood was cheap. As a result there quickly grew up that mighty naval and mercantile marine which challenged the supremacy of even Great Britain herself upon the high seas and triumphantly held its place till wood became a secondary material for the building of ships, a death blow to the American merchant fleets.

The population of the country was increasing by leaps and bounds. Homes were needed in unheard of numbers. Instead of the old family homes of the old country, the old stone homes which housed the race generation after

generation, a new set of buildings were needed on every farm, towns appeared over night and a few hundred dollars built the American workingman a wooden home which none but a prince could have owned abroad.

A few of the later colonists, mostly with money which they brought with them, emulated the mother country and built massive homes of stone and brick, but they were negligible in number. By far the greater number were built from the native forests and there came into being the simple, commodious, hospitable home of those early Colonial days, the only truly American architecture that this country ever knew till the days of the skyscrapers 200 years later. And with the building of those







THE WHITE PINE FORESTS OF MINNESOTA OFFERED A LURE TO THE LUMBERMEN NOT TO BE RESISTED, AND PRODUCTION INCREASED BY LEAPS AND BOUNDS.

cheap but splendid homes the American standard of living rose till her people could never again be content to return to those old cave-like dwellings of their ancestors.

Education has played no small part, but it is really cheap wood which has placed the American standard of living where it is today.

Sawmills sprang up in New England like mushrooms after a rain, but they were little mills. The land was in small tracts and there were many owners. The markets were mostly small and close at hand—except those of the export trade. They had to be, for outside of the rivers which carried the logs to the sea there was no means of long distance transportation. The topography was difficult, the product more or less of a drug on the market, the winters uncertain, and the population was yet comparatively small. Important as the timber had been to early New England, great as the industry had grown, it has always been more or less of a household industry inextricably entangled with the enforced clearing of land. The logs were at first the by-products of the land clearing, it was only later that the industry asserted its independence and the cleared land became a secondary product of little or no importance.

The core of the snowball was found in New England, but the snowball had not started to roll and gather the tremendous bulk which it later attained.

So it was that the white pine forests of New England—the only species of any commercial value at that time—were gradually wiped out by the attrition of the settler and the exploitation of the lumberman till the crown

passed and New York State claimed the lead in the production of lumber. The change was gradual, but by 1840 the change was complete and New York with her great pine and hardwood forests, her many rivers, her Erie Canal (and her budding railroads) was definitely acknowledged to be the new center of the lumber industry.

This change in leadership was not due to any sudden or abnormal growth of the industry in New York. She had already passed the peak of her production a decade or two before, made her bid for supremacy and failed, and it was only the more rapid decline in New England that had overtaken her on the downward grade, and



RED AND WHITE PINE IN MINNESOTA—THE TYPE OF TIMBER RESPONSIBLE FOR THE MATURITY OF THE LUMBER INDUSTRY TO "MAN'S ESTATE" DURING THE SUPREMACY OF THE LAKE STATES.





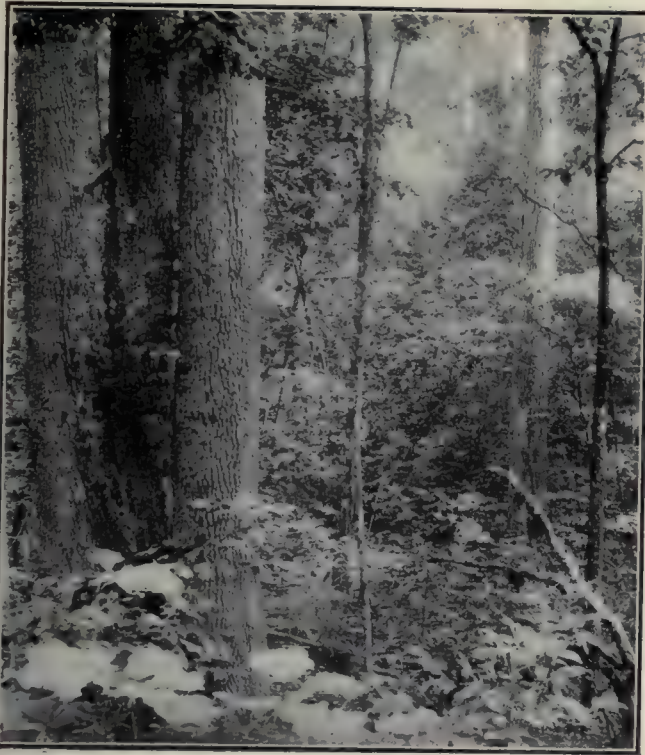
LONGLEAF YELLOW PINE IN LOUISIANA. THE CRY OF THE PRAIRIE STATES FOR WOOD, AND MORE WOOD AT LAST AWAKENED THE LANGUOROUS SOUTH TO THE FACT THAT THE LAKE STATES COULD NO LONGER MEET THE HEAVY DEMANDS—THAT WHITE PINE NO LONGER RULED THE WORLD, AND SO IN 1900 THE CROWN PASSED ONCE MORE, THIS TIME TO THE REBORN SOUTH.

perforce left the honors upon her rapidly bowing head in passing. Already New York City was a great metropolis, her needs were supplied with difficulty from her fast disappearing forests, and yellow pine from the Southern States was stealing tentatively into her all-devouring harbor.

Up to that time white pine and oak had been about the only woods for which there was a market. Why use anything but the best when the best was there in unusable quantities? Even the fences were built of clear white pine without a knot. The lumbermen have been accused of wanton waste and all of the crimes in the decalogue on account of this extravagance but why blame them? A manufacturer sells what the buyers demand, all they will take, and regrets the waste in his factory. Whoever heard of a man wantonly wasting what would sell for gold? But now that the best was gone, or growing costly from a distant source, the demands changed and other species came hesitatingly into the market.

Attaining to the leadership only late in her declining years, New York could not hope to hold her honors long and by 1850 Pennsylvania had snatched away her falling crown. Snatched it but to place it on an already nodding head. For the snowball was beginning to roll, the demands of the country were increasing, the markets were growing wider with every newly opened farm, the whirring of the steam-driven buzz saw had replaced the old jigsaw and the waterwheel. The industry was growing apace, and the forests melted as before a blow torch. The new telegraph lines added thousands of poles to the forest





WHITE OAK IN KENTUCKY—PART OF THE SOUTH'S MATCHLESS TIMBER RESOURCES

products, the mines absorbed timber like a long famished sponge, the ever growing fences called for millions of posts and rails, and lumber was used for everything.

In the meanwhile a mighty struggle, almost the counterpart of the earlier struggle, was taking place across the Blue Ridge and Appalachian Mountains in the fertile valleys of the Ohio and the Mississippi. Cut off from the markets and budding civilization of the Atlantic Coast by what was then an almost insurmountable barrier, thrown entirely on their own resources, the few straggling settlers who had pushed their way across the steep passes of the Cumberland were putting up a brave and well-nigh desperate fight to carve their homes from the most magnificent hardwood forests the world had ever seen and defend them against the savage attacks of the Shawnees and the Miamis.

They it was who built their barns of walnut and their hog pens of the choicest oak, who hacked away at these lordly monarchs till they could hack no more, and then called all of the neighbors in from miles around to a log rolling bee where they would eat their feast of nut brown roasting ears beside a mountainous bonfire of the choicest hardwood logs that ever grew, logs for which the lumbermen of today would sell their very souls.

A wanton waste! Who was there to buy? Where could they sell?

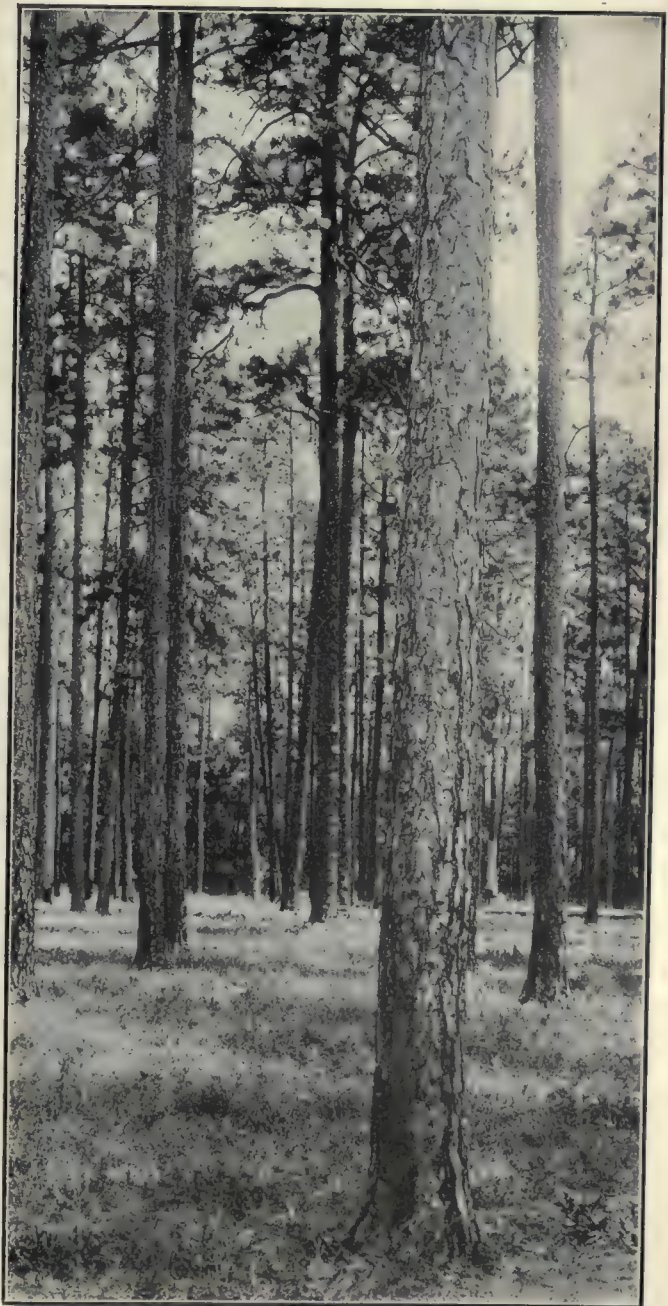
Let the forest stay there? Who had ever seen such fertile land as that on which it grew?

They needed the land, there was no market for the timber; they used what they could and destroyed the rest. It was on the mere remnants of this wonderful hardwood forest that there later grew up the famous

wood-using industries of Cincinnati, Louisville, Columbus, Grand Forks, Saginaw and Chicago.

When Thomas Jefferson stood on the edge of the prairies and looked out across that boundless sea of grass he had gravely predicted that those vast plains would not be settled for a thousand years. Thomas Jefferson was a wise and cautious man and he thought he knew, but he had not counted on the invention and phenomenal development of the railroads, a development made possible very largely by the unlimited supply of cheap white oak ties and glistening steel rails dug from woodlined mines.

Clementine's father and the other intrepid souls who, lured by the gleam of virgin gold, fought their way



YELLOW PINE IN GEORGIA — THE SOUTH HAD AWAKENED WITH A VENGEANCE AND PROCEEDED TO PUMP A SOLID YELLOW STREAM TO EVERY QUARTER OF THE CIVILIZED WORLD



across the untamed continent in '49, paved the way to the conquest of that mighty treeless empire of the middle west. Now, indeed, was there a demand for lumber. For the first time in the history of the country a land was to be settled which possessed no building material of its own. A land which could be settled quickly, for the land did not have to be cleared. A land where more than ever before development was dependent on the lumber industry. "Give us homes in which to live" was the universal cry of the prairies, and the lumber industry replied with a mighty effort to the first great cry for help it had ever heard.

had confined it in New England. It was possible to obtain large tracts of public land by hook or crook, since the government had provided no other means by which a lumberman could legally get title to a large enough tract to support a sawmill, and logging operations assumed unheard-of proportions.

The lumber industry had taken two hundred and fifty years to attain to its majority, but it was a man now, ranking second only to agriculture in economic importance—a giant who would dominate the development of the whole West for years to come. What had gone before was mere child's play; from now on the industry was to



STILL WEARING THE CROWN OF SUPREMACY, THE SOUTH SENDS FORTH HER MIGHTY OUTPUT — A THIRD OF THE NATION'S "CUT." LONGLEAF PINE IS THE MOST IMPORTANT OF THE YELLOW PINE GROUP FOR HEAVY STRUCTURAL AND BRIDGE TIMBERS. OWING TO ITS STRENGTH AND LASTING PROPERTIES, IT IS CONSIDERED SUPREME AMONG AMERICAN WOODS AS A STRUCTURAL TIMBER, AND ONLY WITH THE EXPLOITATION OF THE PACIFIC COAST FORESTS IN THE LAST DECADE HAS IT HAD TO SHARE THIS PLACE WITH DOUGLAS FIR

Lumbermen who had been logging in Michigan for the mere love of logging, because they could not resist the lure of the magnificent timber, the flat country and the tight winters—conditions which must have seemed like heaven to them, after the hardships of New England—logging logs they could not sell except in far away St. Louis and other river towns, responded to the call with a shout of hope.

The lumber industry suddenly found itself grown to man's estate. Here the operations need not be confined to the small tracts of land to which immemorial titles

do the work of a man. By 1870 the Lake States had grasped the crown of leadership with no uncertain hand and the country east of the Alleghanies would see it no more for at least a century.

The lumbermen of Wisconsin and Minnesota heard of the prosperity of Michigan and listened to the call of the prairies with foresight and understanding. True captains of industry, they were the future "Lumber Barons" of more or less doubtful reputation. Robber barons, some of them might have been, but robbers most of them certainly were not. They were men with a



vision of new possibilities and with the courage and force to convert their visions into reality. For the first time in history they could see a market somewhat commensurate with the products that they had to sell, and they hastened to meet it.

No small portable mills and little hay wire outfits for them. The trade of the treeless prairies could not be satisfied with any such obsolete methods. With bands, and gangs, with double bands and "twins" and shining resaws, with steam niggers and "shotgun" feeds, they put together mills of a million feet capacity, mills which sawed the logs from a well timbered "forty" in a single day. The feeding of such a mill as that, costing a quarter of a million dollars, could not be left to chance. They acquired vast tracts of land, that a long time supply of raw material might be assured. The flooding rivers of spring, for centuries the sole transporters of those heavy logs, were too slow and too uncertain



UPPER—AWAKE AT LAST AND THRILLING WITH A REALIZATION OF HER POWER, THE SOUTH INSTITUTED LUMBERING METHODS NEVER DREAMED OF BEFORE AND RAILROADS WERE BUILT AND MACHINERY INSTALLED WHICH WORKED MARVELS IN CLEARING HER GREAT CYPRESS AND PINE AREAS.

LOWER—A PORT OF THE SOUTH—A LUMBER DOCK AT SAVANNAH, GEORGIA, FROM WHICH YELLOW PINE TIMBER IS SHIPPED FOR BOTH COASTWISE AND FOREIGN TRADE.

for them. They built whole railroad systems to keep their mills supplied, invented great steam "jammers" to load their cars, and sent great steam log haulers into the woods to replace the straining horses on the long iced roads. They harnessed lakes, rivers and railroads to haul their products to the waiting world.

It was there that millionaires were made. But these long headed barons of the Lake States were not the only ones to hear the call of the prairies. Those folks of the treeless prairie lands were in need of homes. They were desperate. If the white pine which their forefathers had used would not come fast enough, then they would take some other wood, anything to get out of those sod hovels in which they had been forced to live. They cared not whence it came or how, but give them wood.

The East, no longer able to supply themselves, had long been dabbling off and on in southern pine while they logged their own spruce and balsam for their rapidly growing paper trade, but those widespread pine forests of the South Atlantic States were in the main untouched and more or less despised. But now the insistent call of the prairies reached the sleeping ears of this mighty



giant. It stirred restlessly as from a dream and the sleep-dazed, war-torn South slowly raised its weary head to look about. It was hard to realize the reality of this thing at first and only half convinced the southern pine poked tentatively, cautiously, almost apologetically out into the prairies in answer to that despairing call.

It sold!

The South was awake at last. After 35 years of despondent sleep she was awake. Not yet squarely on her feet, but thoroughly alive and awake to the wonderful possibilities. No longer could white pine rule the world. He had spent his wealth with the reckless extravagance of a profligate and already that still proud gray head was bowing bankrupt beneath the tottering crown.

By 1900 this new born South, confident in her re-awakened youth, set the crown triumphantly upon her luxuriant yellow hair and shook her smiling head defiantly at all the world. The king was dead, long live the king. The nigger and the mule, a combination which had served the sleepy plantations of the old time South for countless generations, had been all

right when they had been shipping only a few boatloads of lumber to the prosperous Northern States and still fewer to the countries across the sea, but it was all too slow to satisfy this lusty youth. The solid yellow stream

which he proposed to pump to every quarter of the civilized world must have a far more energetic source than that.

The flat and rockless country prompted him to build many railroads, and the presence of the railroads suggested the use of heavy machinery, such machinery as lumbermen had never before dreamed of. Great engines set on flat cars and equipped with many drums and thousands of feet of cable which yanked whole trees through sand and swamp to the waiting "empties" on the railroad track, or lifted them cashbasket-wise and laid them down beside the cars. Great sluggish rafts hesitated with the tide on every stream, and sawmills, newly built, shrieked bloody murder



DOUGLAS FIR IN WASHINGTON—THE MINIONS OF THE "GIANT"—THE GIANT WHICH IS REACHING FORTH TO SNATCH FROM THE SOUTH HER POSITION OF SUPREMACY IN PRODUCTION, AND FOR THE FIRST TIME DURING HER REIGN, THE SOUTH FEELS A TREMOR OF FEAR LEST SHE LOSE THAT CROWN WHICH SHE HAS SO JEALOUSLY AND DEFIANTLY WORN.

in each little town. The South had awakened with a vengeance and a third of the nation's "cut" was hers, but she was not without competitors. The red pine and



hemlock of the Lake States barred her from a portion of the field; the second-growth pine of the East restricted her activities there; the Inland Empire of Eastern Washington, Idaho and Western Montana was doing what it could against her. But all these were puny little competitors whom she held in supreme contempt. She looked at her thousands of acres of swaying pines and laughed in her confidence. Full well she knew that they could not successfully compete with her.

But hark! There is a certain rumbling in the West that gives her pause. A dark foreboding of a giant stirring there. A giant of enormous stature and of untold strength. Afar off he is, but of tremendous reach, and already he is snatching covetously at the supremacy which the South has so long confidently held. For the first time the South feels a tremor of fear, an inkling of doubt in her one time strength. Like a blooded race horse, she will hold that killing pace to the very end, and already the end is in sight for her. The giant is thrusting his products under her very nose, wresting her trade from her at every turn, and she feels her crown tottering.

Within another decade the glory of the lumber industry in the South will be a thing of the past. Thousands of her sawmills will be dead, and her arteries of foreign trade will be dried up. The industry itself will not die, any more than it was dead in all of the other regions through which supremacy has so quickly passed, but it will be a weak and shrunken thing compared with which one time it was, and it will struggle ineffectually



TIMBER FALLERS AT WORK ON A BIG SUGAR PINE IN A CALIFORNIA FOREST—AND IT IS THE BEGINNING OF THE END OF THIS MAGNIFICENT TIMBER TREE FOR THE CROSS-CUT SAW WILL FINALLY BRING IT TO EARTH.



THE WONDERFUL FIR AND HEMLOCK TIMBER OF WASHINGTON. THE PRODUCTS OF THESE FORESTS THREATEN THE SUPREMACY OF THE SOUTH—ONLY THEIR DISTANT LOCATION SAVES HER TOTTERING THRONE.

to supply even local demands from the remnants of its once "inexhaustible" forests.

Then, indeed, will this giant of the Pacific Coast, this overgrown child of a restless race, be the last of the generation to wear the crown of the great American lumber industry. He would have been crowned years ago had he not been born before his time and shackled in various and subtle ways. As it is, his honor is assured, if a bit delayed—for he has the strength which all the rest of the nation one time had—and spent.

The story of this great giant is pathetic, even though many of its troubles have been of its own making, and



in spite of the all important part which it is to play in the future welfare of the nation.

A few of the gold seekers who came to dig remained to log and so the industry began, began as it had begun in New England and the Mississippi Valley, with an unlimited supply of raw material and shut off from anything like an adequate market. Began as it has always begun in every section of this country, before there was any real need for it. In this the Pacific Coast was no worse off than the others had been and would not have had any particular trouble if it had not been for the horrible example of the Lake States. Far sighted men in Minnesota had made marvelous fortunes by the acquisition of extensive tracts of timber and the operations of "big" business. Why not do this same thing on the Pacific Coast on a far larger scale fully commensurate with the bigness of the West? It was a glorious conception but it has and is costing the lumber

industry of the Pacific Coast hundreds of millions of dollars. The beauty of that dream took complete possession of the people of the Coast States and many in other sections of the country. "Buy timber land," was the universal cry. The timber barons of the Lake States had done it, and they were millionaires. Lumbermen took up

all of the land they could possibly get hold of, land men and other professional speculators did the same, every grocery clerk and every school teacher who could scrape together a few hard earned dollars, bought timberlands. And every one of them who owned an acre of that precious timber considered himself a potential

millionaire.

Then these "foolish virgins" learned a simple truth which they had overlooked in their enthusiasm; even millionaires have their troubles and potential millionaires are never without them, especially when their potentiality rests upon credit as most of theirs did. All of these troubles were in plain view at the time they bought, but they were too excited and too completely hypnotised by the "glorious conception" and the great land hunger of the American people to see them. They sold and resold and sold again till paper values shot skyward, and timber bought for a dime sold for five dollars a thousand. But



VIRGIN SUGAR PINE AND WHITE FIR FORESTS IN CALIFORNIA—THE GIANT OF THE PACIFIC COAST IS FINALLY COMING INTO HIS OWN, AND IT WILL BE ONLY A MATTER OF THE NEXT DECADE BEFORE HE CAN CLAIM AND IN ALL PROBABILITY HOLD FOREVER, THE CROWN OF SUPREMACY IN PRODUCTION, SUCCESSIVELY WORN BY FIVE GREAT CENTERS OF THE INDUSTRY.

there was something wrong. There did not seem to be the demand for lumber that they thought there was. The Lake States men had sold theirs fast enough. What was wrong?

They tried their best to instill a little life into their sleeping giant. They electrified their mills, they put in double and even treble circulars, they tried to electrify



the logging, they brought to their aid "bulls," "donkeys," "gypsies"—a whole menagerie of improved machinery—they built great flumes of unheard-of length, they logged

single trees which produced as much lumber as many a "forty" cut in the Lake States, they logged on a scale that the world had never before seen, they shipped lumber to South America, to Hawaii, Japan, China, Australia, to South Africa, to the farthest corners of the earth. Human effort and the logger's skill could do no more, and yet the giant only stirred uneasily in his sleep, he did not awake. When the war came he turned over once more, but peace came to him more quickly than it did to the rest of the world and he slept

again. Most of the owners were wide awake now, even though the giant slept. When their money was all invested, when their credit was strained to the breaking point, when the taxes began to come due and the banks began to inquire uneasily about their bonds and interest, when all of their frantic efforts failed to make the giant move, then, indeed, they began to see the shackles which had held him from the first, and which they, blinded by their enthusiasm, had been unable to see before.

It was clear enough now and they marveled that they had not seen it before. Some of the lumbermen had seen it, they had bought with their eyes open and known they would have to wait, but they had not foreseen that these moneyless speculators with their forced sales would block legitimate business for two score of years. They saw the thousands of miles of high

freight rates between them and their much needed markets, they saw that neither the Lake States nor the South was dead enough, they saw the manufacturers

of cement, tile, steel and brick sitting doggedly on the price lid, and far worse than all of the rest they at last realized the stupendous bulk of the Pacific Coast forests themselves and the staggering burden of carrying charges which their ownership involved.

There was the rub. Those overwhelming carrying charges which whispered insistently and imperiously, "Sell, sell, no matter what your price, no matter what your loss, no matter how utter your ruin. Sell before you suffocate."

So the owners sold at every thing which even

looked like an opportunity, sold at ridiculous prices and stupefying losses, but sold because they could not wait.

There was no time when the "timber barons" had held more than a twenty years' supply for their own mills in the Lake States. There was enough timber in this distant West to supply the whole United States for three quarters of a century. There are owners there who cannot hope to sell for sixty years.

And so the giant sleeps. But he's a mighty giant all the same and even sleeping he will soon wrest the crown from the dying South. It is that that he is waiting for. The death of the South will be the fairy kiss which will bring him to life, not only to life but to rule the country. For most certainly he will rule, rule with an iron hand, set the lumber prices of the country to suit his taste, impose on the nation a freight



THE SPLENDID PORTS OF THE WEST COAST OFFER THE TRANSPORTATION FACILITIES NEEDED FOR THE SHIPMENT OF SUCH TIMBER AS THIS DOUGLAS FIR, OF WHICH MORE LUMBER IS NOW CUT IN THIS COUNTRY THAN OF ANY OTHER ONE SPECIES. IT IS IN DEMAND IN THE EASTERN STATES AS WELL AS IN MOST TIMBER IMPORTING COUNTRIES.



bill of half a billion dollars, and live in luxury.

And so will the giant live and rule; and when he dies there will die with him the last remnant of the great

material. And yet the nation's only hope.

Probably never will the nation's needs be better filled than then, but it will be the work of efficient pigmies,



DRAGGING OUT LOGS WITH A TEN-HORSE TEAM, A METHOD SUCCESSFULLY USED IN THE DOUGLAS SPRUCE DISTRICT OF THE STATE OF WASHINGTON. THE GIANT OF THE PACIFIC COAST SLEEPS, BOUND BY THE SHACKLES OF OVER-INVESTMENT AND CARRYING CHARGES, BUT WITH THE GRADUAL WEAKENING OF PRODUCTION IN THE SOUTH HE WILL SPRING INTO POWER AND RULE THE GREAT AMERICAN LUMBER INDUSTRY WITH AN IRON HAND, UNTIL IT IS NO MORE.

American lumber industry as we have known it. A lumber industry there will always be, but a tame, prosaic industry of puny operations, each tiny mill grinding out its apportioned grist from a strictly limited supply of raw

and the mighty giants we have known will be no more. *(Many of the photographs used in this article were furnished American Forestry through the courtesy of the United States Forest Service.)*

**MAN-CAUSED FOREST FIRES ARE PREVENTABLE—DO YOUR PART**



# EDITORIAL

## LUMBERMEN TURNING TO FORESTRY

**A**MERICAN lumbering is in the early stages of evolution. It is turning to the principles of forestry. This trend may not be perceptible to the average citizen. It probably is not, but it is nevertheless true that in almost every timber region of the United States lumbermen may be found who have, within the past five years, turned to some form of forest management. Their number, of course, is relatively small, but their action is highly significant. They have not been prompted by sentiment. They have studied the ground, looked into the future, and have made up their minds that forestry embodies the business principles with which to meet economic changes pressing in upon them.

In the last issue of *American Forestry*, mention was made of the fact that some of the largest of the redwood companies had just decided to apply forest management to their lands. Down in the piney woods of the South the same trend is in evidence. The Director of the Southern Experiment Station is authority for the following statement:

"The best proof we can present that some measure of forestry is at least feasible, and frequently profitable, is the surprisingly large number of southern pine manufacturers who are today putting into effect on their own land measures very like our requirements. The Jackson Lumber Company of Lockhart, Alabama, has since the beginning cut no trees below a high diameter limit, now about 20 inches. The Kaul Lumber Company of Birmingham, Alabama, for years followed a plan of conservative cutting drawn up by the Forest Service in 1906, and has gone back to it again after the lapse of a

few years during the war. The Alger-Sullivan Lumber Company, Century, Florida, has very recently begun work on a forestry program.

"The Allison Lumber Company of Bellamy, I am told, has gotten to the point where they are confident of being able to keep fire out of their slash and to preserve the young growth for a future crop. The Tatum Lumber Company of Jackson and the Batson-McGhee Company of Millard, both in Mississippi, have been cutting conservatively for several years and attempting fire protection on their lands. Most of you are familiar with the policy of the Great Southern Lumber Company in reproducing its forests as a basis for making Bogalusa a permanent city. I have already mentioned the Urania Lumber Company which for several years has been preaching and above all practicing forestry in Louisiana."

In the Lake States no less keen and practical a man than Henry Ford is practicing forestry—not as a fad but as a part of his automobile business. In the Northeast, a number of lumber and pulp companies have employed foresters and are proceeding along lines of permanent operations. These men are real leaders in their chosen fields. They are the vanguard of the industry's progressive wing. They are practical, far-seeing men, whose example belies the declaration of many lumbermen for years that forestry is not practicable. For these pioneers in the practice of forestry in this country, *American Forestry* has the greatest admiration, and it bespeaks for them the public recognition and cooperation which they justly deserve.

## "WE MUST HAVE FORESTS"

**I**T IS probable that there will be no legislation enacted at this session of Congress, providing for a national forest policy. A number of reasons are advanced by those in close touch with legislative progress at the Capitol. Chief of these is that forestry legislation, although recognized as a large and important national problem, is not a part of the present administration's legislative program for this session. Another reason given is that thumbs are supposed to be down on new legislation which will increase public expenditures, particularly if it does not bear the approval of the Bureau of the Budget.

Members of the House Committee on Agriculture, before which exhaustive hearings on the Snell Bill were held in January, frankly admit that there is little chance of the Committee reporting out a bill of any kind at this session. It is known that the Committee is divided as to the character of legislation which should be recommended. What is more unfortunate, it apparently has not made a determined effort to reconcile differences and

to draft a bill which would be acceptable and would lay the legislative ground-work for the development of a broader and more inclusive policy later. That is the least that could be done.

Unquestionably public pressure has been insufficient to arouse the committee to action. The situation is disappointing but it is by no means a cause for discouragement. It points to the need of renewed efforts on a larger and more aggressive scale than ever. The hearings thus far held have not been time lost or energy wasted. They mark a step forward. They have brought the subject into the foreground. They have served to clarify and to bring home as never before the far reaching effect of forest depletion. The need for action has been presented in the people's court.

Now is the time to prepare for a greater and more inclusive campaign next winter when Congress again convenes. A tremendous sentiment for forestry is developing throughout the country. Industrial organizations are more and more recognizing the forest problem



as one of the big economic problems of the day. Farmers are making forestry a plank in their organization platforms. State and local forestry associations are springing up everywhere. Those already in existence are growing stronger. Game, recreational and other organizations of similar character are awaking to the fact that forestry is necessary to the accomplishment of their objects. The general public is at the threshold of fully appreciating the diversified and sweeping way in which forests support our social and industrial welfare. The sentiment, "We

Must Have Forests," is coming from all directions and from all classes.

This sentiment is a gathering force. It represents varying conception of forestry and varying interests in forests, but its big common objective is a national forest policy. Wisely united and directed, its strength will be increased many fold and the accomplishment of a national forest policy will be a matter of a relatively short time. Why not bring this sentiment to a focus in a large national forestry conference in Washington next winter?

## THE CENTRAL STATES FORESTRY LEAGUE

**I**N A recent letter to the chairman of the Public Affairs Committee of the Union League Club, Chicago, the President of the United States, Warren G. Harding, wrote:

"The problem of forest conservation, and of the most economical utilization of our forest resources, is now universally recognized as one of the most serious confronting the nation. Much progress has been made in the last few decades in dealing with it, but there is need for much further accomplishment. Feeling, as I do, that the development of a broad constructive policy touching this subject is highly desirable, I have to express particular satisfaction with the effort which is represented by your conference."

President Harding referred to the Central States Forestry Conference held under the auspices of the Union League Club on April 19 and 20. This conference marked the permanent formation of the Central States Forestry League, an organization which now stands as an expression of leadership first taken by the Union League Club, a public service organization of national recognition.

Less than two years ago, the club appointed a forestry committee which effected a temporary interstate organization in which eight States—Indiana, Iowa, Illinois, Missouri, Michigan, Ohio, Minnesota and Wisconsin—were represented. The first conference was held at the Union League Club in Chicago in February, 1921. The object was to arouse common interest in forestry in the Central States rather than to establish a permanent organization. At the conference this spring, however, the movement was carried a step forward by the delegates themselves who voted unanimously to make the organization permanent.

The Union League Club rightly deserves the Presi-

dent's commendation. Its leadership has been a telling force. It has advanced materially the cause of forestry in the Central States by bringing the forest situation in each State and in the region as a whole clearly before the people and by fixing public attention upon its economic importance.

Something of the severity of the situation in these States is reflected in the resolutions passed by the conference. They call attention to the fact that the eight States represented contain 34 million or one-third of the nation's population and "the largest and best continuous area of tilled land in the world," producing a farm crop worth over three billion dollars; that this district today faces a most serious shortage of timber "with only about 12 per cent of its area in trees, not 3 per cent real forests in fair condition" and that it has now become necessary to import 60 per cent of its lumber from the South and West at an annual cost of \$300,000,000 a year.

"We regret the evil consequences of this forest destruction," reads another paragraph of the resolutions, "and the utter indifference of the public, the dismantling of hundreds of miles of railway, the abandonment of towns and of hundreds of farms with all the resultant injury and suffering and the loss of satisfactory local government. We call attention especially to the serious damage done to good farm districts and other lands by unusual erosion, following the clearing of lands, and we urge that every reasonable effort be made to stop this."

Surely this is a situation which needs not only aggressive work by the individual States in their respective fields, but the larger public influence to be derived from common effort and cooperation. This the Central States Forestry League, as a permanent organization, should supply.





# ENGLAND'S FORESTRY PROBLEM

By J. Joyce Broderick

Commercial Counsellor of the British Embassy at Washington, D. C.

Mr. J. Joyce Broderick, commercial counsellor of the British Embassy, in accepting the Douglas Fir seed, presented to Great Britain by Mr. Charles Lathrop Pack, President of the American Forestry Association, reviewed the forest policy of his country.

IN the course of a long and varied history, the people of Great Britain have given many evidences of a surprising faith in Providence and relied, when crises overtook them, upon the provision of pillars of cloud and pillars of fire for their guidance. Or, perhaps it would be nearer the truth to say that they have always harbored a touching confidence in their own ability to meet sudden emergencies of all kinds. At all events, they have, as a people, tended to reject or disregard the doctrine of preparedness. Consequently, the process of their education has been an expensive one and the European war in particular taught, or ought to have taught, us many a costly lesson. One of the principal and one of the most salutary of those lessons related to our complete neglect to make any provision whatever for insuring a domestic timber supply. There were, of course, many excuses for our failure in that respect. The area of our island is comparatively small. Our population increased very rapidly under the industrial system. Land was required for factory construction, for the extractive industries, for agriculture. There was not very much waste land in the Kingdom. Our maritime communications were efficient, well protected and rarely menaced. With cheap freight rates we were usually in a position to secure adequate supplies of foreign timber from the Baltic and from America at prices with which home grown timber could not compete. Therefore, we paid little or no attention to the conservation or extension of our domestic forest resources. When it became necessary for us to supervise and conserve the forest resources of the Indian Empire, our students were obliged to go abroad to learn the science of forestry. To our French friends we are indebted for our earliest training, as it was at the famous French institution at Nancy that our men first learned the science of silviculture. A few schools of forestry were later established at English Universities and we built up in India what is generally recognized as a very efficient forest service which has done an immense amount of good to the material resources of that country.

"In Great Britain itself, unfortunately, we took things easy until the European war broke upon us. Then, to the surprise of all but a few who had been laboring under the handicap of public indifference, it was discovered that our total domestic timber supply was entirely insufficient for our needs. Something less than four per cent of the total area of the United Kingdom consisted of woodland. Our war requirements were enormous and it was estimated that after less than three years of hos-

tilities we had cut down the timber over more than a million acres. I have never seen the figures of our total war consumption or the total price we paid for our previous lack of a comprehensive forest policy. One estimate I have seen stated that we paid during the first two years of the war for imported timber about \$200,000,000 more than we would have paid if home grown timber had been available.

"It was, as I have said, a very costly lesson, and I doubt whether our people have thoroughly learned it yet. However, it impressed the British Ministry of Reconstruction probably as much as any other factor in our post-war situation. The Ministry made strong recommendations about it. They recommended, amongst other things, that the Government should spend some \$60,000,000 in planting such waste lands as existed, the programme of planting to be carried out over a comparatively short period of time. In the year 1919 the subject was taken up in Parliament and an Act was passed establishing a Forest Commission composed of eight members to work out a carefully planned forest policy for the whole of the Kingdom. A considerable appropriation was set aside for the planting of 250,000 acres in ten years and of nearly 2,000,000 acres in 80 years.

"The interest taken in the matter by Parliament should reflect, and perhaps does to some extent reflect, a wider popular interest in the whole subject of forestry in Great Britain. My impression is that a good deal has yet to be done before the attention of the people as a whole is fully aroused. In the various British Dominions forest resources have a more immediate effect on prosperity, and tangible evidence of their growing sense of the vital character of the question of timber supply was given in July, 1920, at a British Empire Forestry Conference held in London and attended by representatives and experts from all the Dominions. At that Conference resolutions were passed urging the adoption of a comprehensive forest policy and the establishment of an efficient forest service in each Dominion as well as a careful avoidance of waste in the utilization of forest products. Finally the Conference established a permanent Empire Forest Association to promote and develop public interest in forestry throughout the Empire. The Association, I imagine, will be very similar to the American Forestry Association in its objects and methods. Its headquarters will be in London, but its membership will extend all over the Empire.

"The Forest Commission established in Great Britain under the Act of 1919 is presided over by Lord Lovat,



an authority of long and wide experience. It is reported to have made a vigorous beginning. It has already planted a large area approaching 5000 acres, I believe, and it is purchasing extensive tracts of waste and grazing country which will be converted into productive woodlands. If nothing interferes with its programme, we, or our descendants, may hope eventually to see Great Britain practically self-supporting as regards timber supply. Each year's work will improve our position materially.

"Nothing of what I have said is new to the members of the American Forestry Association. You have all followed, probably much more closely than I can, the developments that have taken place and the plans that are being worked out. But you have done more than that. You have contributed in a practical way and with great liberality to the success of these new undertakings. The gracious gift of Douglas Fir tree seeds which you made two years ago to the British Commission has enabled them to make a beginning in replacing the vast number of trees sacrificed during the war.

"In the meantime, the Chairman and members of the Commission have had the opportunity of expressing to your president their gratitude for that gift. Your President has had the opportunity of learning for himself how the gift has been utilized. He himself has now come forward with a similar generous offer. I am here to tell him of the indebtedness of His Majesty's Ambassador for his generosity and to accept his offer with sincere gratitude. Thanks are due to him not only from the British Ambassador but from the British people. The gratitude of the latter I dare not even try to express, but you may be sure that the forests that spring from these seeds all over the British Islands will stand as a long record of his generosity and yours. They will represent a work of great practical value achieved through your sympathy and assistance and they must surely be a bond of permanent good will between our peoples."

#### PENNSYLVANIA'S NEW FORESTER

MAJOR ROBERT Y. STUART has been appointed Pennsylvania's new commissioner of forestry, succeeding Gifford Pinchot, who resigned. Major Stuart was born in Pennsylvania, at Carlisle, in 1883. He was educated in the public schools of Carlisle and Harrisburg, and was graduated from Dickinson College in 1903. A year later he entered the Yale Forest school, graduating in 1906. He was then appointed to the United States Forest Service, and assigned to forest management in Montana, Idaho and Wyoming.

In 1912, Major Stuart was transferred to Washington, D. C., where he was in charge of general forest administration. He was appointed a captain in the Engineer Reserve Corps for service in the forest regiment. He was sent to France immediately to assist in the acquisition of timber for the American forestry regiments.

He was made a major the following year, and later was placed in command of the Fifth Battalion, Twentieth

Engineers. He was cited by General Pershing for his work with the American Expeditionary Forces.



R. Y. STUART

Pennsylvania's New Forester

Upon his discharge from the army, Major Stuart returned to the Federal Forest Service, serving as chief of the western branch of forest management until he was named deputy commissioner of forestry in Pennsylvania on May 25, 1920.

#### PINES

*I love the noble presence of the pines  
Whether they rise in long and lofty lines  
Or singly stand at ward  
Upon some stretch of smooth and sloping sward.  
A majesty sublime they wear for me,  
Something of Deity in every tree.*

CLINTON SCOLLARD.



# THE WELCOME CAMPER

By Susan S. Alburtis

**M**Y husband and I spent a month touring New England last summer, pitching our tent at practically a new place every night. It was the first camping experience of our firm, not young in years, but young in the love of the out-doors and ever mindful of the fact that

Quonochontaug, near Westerly, Rhode Island, left his key in the door when he went to work, so that we could get running water from his kitchen.

The senior partner of our firm is a healthy, optimistic man with the habit of cheerfulness, excellent qualifications for a camper. There are but two

things he will not do, and recognizing them the junior member accepts the conditions and tries to be cheerful too. He will not drive the machine nor dress otherwise while on the road than if he were on his way to visit friends. In camp he wears the serviceable khaki, but not on the road. He does not believe that clothes make the man, but he does believe that first impressions count for much when asking a stranger's permission for the use of his land over night. "The gypsy motorist with the running boards of the old bus groaning beneath their loads of tenting, bedding, eatables and utensils" has no appeal for him, so I accede to his whims, drive the machine, and assist him to conceal all of our equipment in the deck of our roadster and in a neat box securely fastened to

one of the running boards. In preparation for our trip we studied maps and information published by the American Automobile Association. We wrote to State foresters and to the Forest Service at Washington regarding camp sites in forest reservations. We read maga-



ROAD SCENE IN THE PINKHAM NOTCH

The White Mountains are seen in the distance. One of the many beauty spots on a New England Tour.

there is an owner for every foot of land, whose rights should be respected. Not the least that we learned on the trip is that hospitality is universal in this land wherever the Golden Rule is practiced. Does "Do unto others as you would that they should do unto you" mean that

you and I, city dwellers, would be gracious to strangers who spent a night on our premises without permission; who built a fire of our wood, endangering our home; who left litter of all kinds for us to pick up, and who drove off in the morning without acknowledging a night's hospitality except for a condescending wave of the hand? Campers of this kind probably went "gypsying" last summer, but I doubt if they found in their Christmas stocking a box of celery from Pennsylvania; a basket of apples from an old sea salt in Maine; a sketch of Woodbine from the farmer-artist in New Hampshire, and good wishes for the New Year from new acquaintances in Maryland, Pennsylvania, Connecticut and Massachusetts. I must confess that I felt the Golden Rule somewhat strained when our host at



MOUNT ADAMS AND MOUNT JEFFERSON FROM GLEN ROAD

A meadow in New Hampshire where a camp was made so that the beautiful view of the mountains could be enjoyed.



zine articles and consulted friends who had toured New England, but from none of these did we get the slightest information of that which has made our trip such an everlasting pleasure—the kindly interest and hospitality shown to us by our wayside hosts. We were very tired when we asked for our first camping privilege. Had we been refused, I doubt that we would have tried again. Our home is in Chevy Chase, Maryland, on the outskirts of the national capital. Washington's traffic is not heavy and its regulations understandable by one of average intelligence. In our innocence we thought similar regulations existed everywhere. We reached Philadelphia during the heavy traffic of late afternoon, and becoming confused at the City Hall turned to the right toward

selves and give them now as our first advice to campers. Leave the main highway for a mile or two about sunset. Ask permission to camp at a prosperous looking farm house. State you will build no fires without permission and that you will leave the grounds as slightly as you find them. Had the wholesome "Mrs." a few miles from Bustleton to whom we made this first request refused us, we should probably have changed the trip to the hotel route. Her hospitable answer "Camp wherever you will be comfortable, and if it should rain there is plenty of room in the house," was the beginning of the welcome that met us throughout the entire time.

These words were repeated by another host at North Kennebunkport, Maine; again on the Mohawk Trail;



DOLLY COPP PUBLIC CAMP GROUND

This public camping ground in the White Mountain National Forest is near the base of Mount Washington. There are excellent water and all necessary conveniences for cooking, while a forest ranger is on hand to give assistance and information.

South Broad when a left turn should have been made to North Broad. At every corner was the sign "No Left Turn" with a traffic officer at its side. It took more than average intelligence to know how to get back unless one ran out of the city and entered again. Finally we discovered that one turns left in the middle of the block on that street instead of at the corner, and so we at last reached North Broad, headed in the direction of New York.

It was therefore quite late when we reached the Boulevard, no camp site in view, and to add to our troubles we had the first and only puncture in the entire 1825 miles. We put to test the rules we had made for our-

and by this kindly first hostess when we returned for our last night in camp. We did not go in. The family visited us under a stretch of stars rarely seen by city people. The father and his boys had just completed setting out 140,000 celery plants, and somehow we pitied all other boys who had not had the opportunity for such family co-operation. To our first outdoor breakfast came a gift of warm milk, the beginning of food gifts that sometimes caused us embarrassment. An Irish track hand, very early in the morning, at our camp at North Haven, Connecticut, insisted on giving us the lunch that he had just bought, excusing himself by saying that he was "too strong to work that day." Stopping at a farm-





THE CAMP IS READY

By pitching the tent at the rear of the roaster and dropping the side flaps a two-roomed apartment is formed and also affords convenient use of the deck while dressing.

house in Maine to inquire our way, we were presented by the small son of the family with a basket of apples. We offered to pay for it, but he insisted it was a gift. During a four days' stay on the Maine coast we had good cause for indebtedness to one of her old deep sea fishermen. He had kept us generously supplied with sea food, but we felt it just a little too much when he killed and dressed a chicken from his small flock and presented it to us as we were leaving. Milk, apples, carrots, cucumbers, canned strawberries were given us without price, and most generous were the measures when we did pay. "What's the price of corn?" we asked on the road to Plymouth. "Thirty-five cents a dozen, fifteen ears to a dozen," was the answer.

I repeat: Hospitality is universal if appreciation is shown. Appreciation does not always mean a money return, but of that which stands for the brotherhood of man. We always kept our hosts posted as to our movements, for apparently they seemed much interested in our future, fearing sometimes, I felt, that our gray hairs would come to grief. No matter how hurried we were it was never too much trouble to show our equipment, in which boys were always interested. We had spent much time on making it compact, by nesting the kitchen utensils and studying sport catalogues for folding stoves, chairs, cots and tables, and really were quite proud of it.

Speaking of boys, I wonder if we realize the passing of much of our good old New England stock? We left our machine on the bluffs in Maine, while we camped on the shore, in the care of Mrs. Mary Easton, 83 years old, living alone in a substantial farm house meant for two large families. Across the road lived John Everett, 70 years of age, alone in the old house where he was

born. Down the road the Easton girls had laid away twenty cords of wood for the winter's warmth, for while still "girls" they could not exercise much at the ages of 93 and 87. Still further away lived Will Giles, the lobster-fisherman, wife and mother gone these many years and no children to cheer him. The county provides a teacher if there are twenty children in the district. There was but one child there last summer. Newer but not better stock from Europe will soon take its place.

To camp away from the main travel is the way to find this old stock. A few miles outside of New Haven our good fortune made us acquainted with the eighth generation of the Frost family, whose forefathers received their grant of land from the English crown. In the early morning fine specimens of cattle passed our tent on their way to pasture, descendants of a wedding present to the present owner's grandmother at her marriage a hundred years ago. Their natural taste for strange food had not been lost in their descent, as I barely rescued our towels that were drying on a bush. A detour of twenty miles over a narrow country road in New



OUTFIT FOR COOKING AND SERVING MEALS

Pail on the left contains all necessary utensils for two; folding table when open is a yard square; kampkook stove and provision box at right. New Hampshire trout stream in the background, an excellent place for a week-end stay.

Hampshire made us acquainted with the artist-farmer who later sent me the sketch of Woodbine, his home on the Connecticut River. He is descended from one of the Minute Men of Concord and he lived



in that town in the days of the Alcotts. Amy Alcott was his first drawing teacher. A treasured possession is a picture of Louisa M., drawn by Amy in 1865. We camped here at the close of our hardest day of travel, over a hundred miles on a hot day over the "washboard road" of the Connecticut River Valley. This artist has been a teacher of drawing. He is a ventriloquist, a musician, a plant breeder. We became acquainted with all of these accomplishments during the evening's entertainment that he and his wife treated us to. So busy are they being happy and giving happiness to others that this old couple know nothing of lonesomeness on their farm on the Connecticut River.

Six nights for one cause or another we spent in hotels, where nothing regarding us was of interest but the size of our bills and tips. They were the lost nights of our vacation. Twice we paid a dollar for the privilege of camping in a meadow on the Peabody River in New Hampshire. A hotel proprietor collected this toll, but not many miles away on the road between Lost River and Haverhill the proprietor of Wilwood Inn led

us to a trout stream, not visible from the road, for a week-end camp, suggested that we build a fire and helped to collect the wood for it, refusing any remuneration save for a trout dinner that we shall long remember.

We camped one night in a public camp at Gale River in the White Mountain National Forest. This is a new camp and not as attractive as the Dorothy Copp Camp, near the Glen House, where there is an excellent spring and an attractive fireplace. We pushed up among the firs and spruces and had our first experience of the little woodfolk running over our tent roof during the night.

## The Story of Two Matches

"Here is a pretty state of things," said the traveler. "Dying for a smoke, only one match left, and that certain to miss fire! Was there ever a creature so unfortunate? And yet," thought the traveler, "suppose I light this match, and smoke my pipe and shake out the dottle here in the grass—the grass might catch on fire, for it is dry like tinder; while I snatch out the flames in my hat, they might evade and run behind me, and seize upon yon bush of poison oak; before I could reach it, that would have blazed up. Over the bush I see a pine tree hummock of moss; that too would fly in fire upon the instant to its remotest bough. And the flame of that

The forest ranger called on us with a permit to build a fire and before the tent was pitched a "happy-go-lucky" young fellow from our own state gave us a friendly greeting. He was enjoying his camping vacation, but with no apparent purpose other than to make mileage. We had seen a wonderful sunrise that morning from the top of Mount Washington and I asked him if he had gone to the top. "I am out to see scenery not to climb mountains," was his answer. Either his knowledge of natural history or mine of up-to-date slang was lacking, for when I spoke of a loss that we had had through chipmunks, he said "I don't doubt it. A fellow down the road told me those fellows are abroad in summer and have passkeys for every hotel and take everything that

isn't nailed down." Public camping grounds are a necessity where travel by campers is heavy, but one does not bring back a knowledge of the people of the country any more than if he stayed at hotels. He meets the traveling public but not the friendly farm folks. To these friendly people who made our summer so pleasant we express our gratitude. Time after



THE CAMPING PARTY ON THE ROAD

When traveling none of its equipment is visible. The box on the running board carries eight blankets, mosquito net and outing flannel night clothing. The tent and stools are compactly stowed in the rear deck of the roadster together with two suitcases, two army cots, a folding table, kampkook stove, tin provision box, nested kitchen utensils, tarpaulin, towline and tools.

time as we left your hospitable grounds we quoted:

"Let me live in a house by the side of the road,  
Where the race of men go by,  
They are good, they are bad, they are weak, they are strong,  
Wise, foolish; so am I.

Then why should I sit in the scorner's seat  
Or hurl a cynic's ban?  
Let me live in a house by the side of the road  
And be a friend to man."

May the campers who apply to you in the future receive as kindly a welcome as we did. The fault will not be yours if they do not.

long torch—how the trade wind would take and brandish that through the inflammable forest! I hear this dell roar in a moment with the joint voice of wind and fire. I see myself gallop for my soil, and the flying conflagration chase and outflank me through the hills. I see this pleasant forest burn for days, the cattle roasted, the springs dried up, the farmer ruined and his children cast upon the world. What a world hangs upon this moment!"

With that he struck the match, and it missed fire.

"Thank God," said the traveler, and put his pipe in his pocket. Robert Louis Stevenson



# FROM WILD TO GARDEN FLOWERS

By Dr. R. W. Shufeldt

(PHOTOGRAPHS FROM NATURE BY THE AUTHOR)



HERE was a time in man's history—when the world was very young—when such things as cultivated flowers were unknown. We can not conceive of the Cave Man having any knowledge of such a science as the artificial production of new species of flowers, or, indeed, taking any interest in flowers at all. Doubtless, at a much later period than that, myriads of different kinds of wild flowers were to be found in many parts of the world, but no one had yet conceived the idea of producing new varieties of them. There is a very large literature on this subject—practically libraries devoted to it; so, were one to dip far into its most ancient parts, it is quite possible that one might meet with a treatise here

tion, through changes in soils and environment, or through cross fertilization.

In the case of the hyacinth, for example, the famous horticulturist Paul states that that plant was brought from the Levant to England in 1596. He further says that the petals of the original flower were of a flimsy sort—pointed, narrow, and more or less wrinkled. In these days hyacinth petals are of a solid sort, being smooth, rounded, and more or less broad. A year after this Gerarde claimed that there were four different kinds of hyacinths known in England, while Parkinson states that in 1629 there were eight. In a work published in Amsterdam in 1768 the statement is made that at that time there were upwards of 2000 varieties known in Holland; but more likely one-third that number would be nearer the mark. Even so, the fact remains that about three centuries ago, several hundred varieties of hyacinths had been produced from the original stock—a fact of decided significance from many points of view.

It must be borne well in mind that in the case of each and all of our cultivated flowers, however extravagant



COMMON WILD OR PASTURE ROSE

Fig. 1. Of all our wild flowers, no species is better or more widely known than this lovely rose of the fields and skirts of the woods; it blooms all summer long.

and there, which would go to prove that at least five centuries ago, or perhaps more, there were those who understood more or less about the production of extravagant forms of flowers and leaves through natural selec-



UNUSUAL CULTIVATED ROSE

Fig. 2. Here we have a variety of garden rose bred from the wild one, that has not, as yet, quite lost all of its original characters; it has comparatively few petals, while the rich array of stamens and anthers is completely exposed.



they may be in form, color, and other characters, they have *originally* been derived from some wild species in nature; but, departures once established, no end of other kinds may be produced through artificial selection and other means. Our domesticated animals are in the same case, as, for example, all the various species of fowls, cattle, horses, dogs, pigs—and the rest.

"It is interesting to compare the hyacinths of 1629 with those of 1864," says Paul, "and to mark the improvement. Two hundred and twenty-five years have elapsed since then, and this simple flower serves well to illustrate the great fact that the original forms of nature do not remain fixed and stationary—at least when brought under cultivation. While looking at the extremes, we must not forget that there are intermediate stages which are for the most part lost to us. Nature will sometimes indulge herself with a leap, but as a rule her march is slow and gradual." To this great truth he adds that the cultivator should have "in his mind an ideal of beauty, for the realization of which he works with head and hand."

In studying the question of the derivation of garden



PETALS CROWDED TOGETHER

Fig. 4. Many admire this type of rose; its dark green leaves and pale pink petals are unusually attractive. It required a long time of selective crossing to obtain such a result as this, its remote ancestor being the common wild rose.



GARDEN ROSE RICH IN PETALS

Fig. 3. When the number of petals is very great, they usually shut out of sight all of the central and very essential structures of the flower, so plainly in view in Figure 2.

flowers from wild species, and employing species of flowers selected from the flora of this country as examples in our demonstrations, it must be remembered that a great number of those now flourishing here in nature originally came from other parts of the world, more particularly from Europe and Asia. Owing to differences in soils and climate, many of these have undergone considerable change with respect to form, color, and proportions; so that, in producing new species from them, these are often quite different from those obtained by the Old World horticulturist. Furthermore, we must remember that in the case of the escapes of garden flowers to the woods and fields, however much these may have changed under cultivation, there is always a strong tendency to revert to the wild form. The time in which they accomplish this varies in different flowers; and it also varies in the matter of extent, though in most cases it is quite perfect. As a rule, it requires several generations, flowering through as many seasons, to accomplish these reversions, and it is an extremely interesting thing to observe in any particular flower. Often some variety of rose will furnish an excellent example of it; indeed, to illustrate this particular phenomenon in flowers in





COMMON GARDEN GERANIUM

Fig. 5. Through cross-fertilization and selection, geraniums have come to assume many forms and many colors. This lovely specimen was of a deep red or rich carmine.

general, no other genus than the genus *Rosa* offers better material for the purpose.

We have in this country quite a number of species of wild roses—perhaps as many as twenty in the eastern United States. These species are readily distinguished in their wild state, as the characters of flowers and leaves, and other structures, are very distinctive. One of the best known ones is our common Pasture Rose—a photograph of a specimen of which is given in Figure 1. Disregarding all parts of this plant save its flowers, it will be noted that the latter possess five heart-shaped petals each, they being of a delicate rose-pink color. The history of the cultivation of wild roses extends far back into the earliest days of antiquity; and perhaps all civilized nations of history have contributed, more or less, to the production of the hundreds of cultivated or garden species and sub-species now known.

When thus cultivated, all parts of the plant are modified; but in so far as the wild flower is concerned, the main objects are to obtain an increase or decrease of size; wide variations in color; a great increase in the number and form of the petals, with some changes in other parts; and, finally, a more or less powerful enhancement of the original fragrance. As cultivation pro-

ceeds, a proliferation of the petals—usually at the expense of the stamens—takes place, and as a result we have, among hundreds of other types, such productions as are shown in Figures 3 and 4.

A beautiful stage in the passage from the wild rose to a cultivated one is presented in Figure 2. Here the petals, of a rich cream color, have not entirely lost their cordate form, while they have advanced to a double tier, as compared with the single one of the wild species. Its fragrance is powerful, and the number of stamens is still great. Whoever is responsible for the production of this variety may possibly be able to give an account of its evolvement from the wild form; but on the other hand, of the hundreds of varieties now known to the rosarian, the parentage of only a few can be stated with certainty. And, were the rose shown in Figure 2 to be returned to nature, there can be no question but that in a few years its descendants could scarcely be distinguished from the wild species from which it was derived.

As before stated, the cultivator of roses must use his head as well as his hands in producing new forms or varieties, as no progress will be made if it be otherwise. There is much literature extant on the cultivation of this genus of flowers, and a certain kind of classification exists in regard to them. In fact, cultivated roses have been relegated to certain classes, as the climbing roses, the single-season bloomers, the autumn roses or hybrid perpetuals, and the continual bloomers. There are many



WILD GERANIUMS

Fig. 6. The flower here shown is an unusually perfect specimen of the eastern form of the wild geranium or crane's bill; its petals are of a light purple, and the species gets its name from the fancied resemblance of its long, fruit-bearing beak to the bill of a crane.



sorts in each and all of these groups, and no end of favorites. A complete account and history of rose cultivation, with descriptions of all the varieties, would furnish sufficient material for several good-sized volumes,



THE NARCISSUS

Fig. 7. Our Paper-white Narcissus, here shown, is a flower beautiful in form and possessed of an unusually rich perfume; it is, with its relatives, related to the daffodils and jonquils.

while the entire subject is brimful of interest. In not a few instances, the changes wrought through cultivation are truly remarkable, and often no semblance of the wild flower is to be seen in what some people call the improved varieties. Apart from the interest they have for us, such studies and investigations are of extreme importance. For the most part, with respect to flowers, the experiments and their results shed a flood of light on the possibilities of evolution in the plant world, and the facts derived may be applied to various other problems. Commercially, too, they have a modicum of value; for in the case of roses, we obtain attar or oil of roses from them, and the petals of the rose of France give us a fine red an astringent. So, if in the production of such varieties we produce a rose with a superabundance of petals, and these carry a large amount of

the aforesaid constituents, the economic value of the transformed flower is greatly enhanced.

Although some flowers change enormously under cultivation, the most highly cultivated ones never sufficiently lose their identity so as to mask their origin. This is seen in the extravagant varieties of pansies that horticulturists have obtained—one can always see the wild species in them. Again, speaking of pansies, it is remarkable to note how promptly some of the escapes from gardens—markedly transformed varieties—will pass back to the parent stock from whence they came when allowed to run wild in nature. Amateur horticulturists would do well to make such experiments as these and record the results, as in their course some of the surprises carry very good lessons. Then, too, the florescence of some of our garden fruits and vegetables offer attractive material for such purposes, as in the case of



HYACINTHS ARE POPULAR

Fig. 8. The flowers of this particular specimen were of a deep purple shade; other varieties are pure white; while still others are pink. This cut gives a good idea of the plant, including, as it does, flowers, leaves, bulb, and short, straight, white roots.

peas, beans, strawberries, and others; but this is a branch of the subject that does not fall within the limits of the present article. Moreover, we have several



varieties of wild peas and others of the same family which it is better to study in that way than to cultivate their relatives among the vegetables of the kitchen garden—important as the latter investigations may be and really are. A very large number of geraniums have been, in time, produced through selection and crossing, and some of them are among the most beautiful of our garden plants; (Fig. 5) and of the world's wild flowers, more than an hundred species of geraniums have been described by botanists. They occur in the temperate regions rather than in the tropics, and nearly twenty of them are members of the North American flora. Many

of Crane's bill by which this plant is widely known. In the opinion of the writer, it is a far-fetched resemblance; but then there are many others of a similar kind to be met with all through the vocabulary of common and scientific names of our wild flowers, together with not a few of the garden ones. A word in regard to the great difficulty of securing photographs of the wild geranium may not be out of place. In nature we rarely find it



ORPINE OR LIVE-FOREVER

Fig. 9. Orpine has many common names; in various localities it is called pudding-bag plant, live-long, midsummer-men, witches' money, and garden stone. It is a member of the Sedum family.

labor under the entirely wrong impression that our garden geraniums were derived from our wild ones or common Crane's bill—a beautiful plant with handsome purplish flowers and shown here in Figure 6. But it may be pointed out that our garden geraniums were all doubtless bred from the plants of the genus *Pelargonium* of South Africa—at least this appears to be the opinion of our best informed botanists. To return to our wild geranium, three of the elongate seedpods may be seen beneath the central flower of the picture, and it is the form of these seedpods which is responsible for the common name



THE GARDEN LIVE-FOREVER

Fig. 10. The leaves of the bladderworts, or garden live-forever, both the wild and the cultivated ones, may be made to swell up, bladder-fashion, by simply holding one for a few moments in the mouth.

growing in a situation where a satisfactory exposure can be made, while the slightest breeze will cause its delicate stems to exhibit more or less motion—usually more. This compels us to try an indoors picture, such, for example, as is seen in Figure 6. Now, this plant droops on the very slightest provocation, and is sure to do so if plucked and taken home in the usual way with other flowers. The specimen here shown grew within two minutes' brisk walk of the room in which the writer's flower-photography was done. As perfect a specimen as possible was first located; the background was all arranged; the plant was dug up with a generous amount of sod and instantly placed in a bucket containing a couple of inches of water, when, shaded by an umbrella, it was rushed to the room where all was in readiness—even to the extent of focussing upon another plant, the



fresh specimen replacing it the moment it was brought in. However, few of our wild flowers require such hasty action as this in that we may secure good photographs of them.

From the geraniums we may pass to such a beautiful group as the typical narcissi, with their cup-shaped coronas (Fig. 7). There are upwards of twenty species of these, the majority of them falling in the flora of Europe.

They are great favorites everywhere among the flower culturists, as they readily lend themselves to the production of beautiful types—all famous for their exquisite fragrance. It is well known that one fine specimen of narcissus is sufficient to perfume a large room and we are all more or less familiar with its extreme delicacy of odor. Perfumers have taken advantage of this property and produced from its flowers some of the finest perfumes made, the best oils being obtained from *Narcissus odoratus*, cultivated for this very purpose.

Returning to the hyacinths, we find that the name of these plants has been loosely applied; and not only to these but to the grape hyacinth; the blue iris; the gladiolus and to the common larkspur as well. It has also been applied to a sub-precious stone. Long ago Gray placed our wild hyacinth or Eastern camass in the lily family, stating that it is found growing in rich ground from western Pennsylvania to Minnesota southward to Texas and Georgia, and he remarks

that "This species should be carefully distinguished from the larger-flowered plant of the Northwest which has long passed" under another name in botanical science. In Gray we find the genus created to contain the wild hyacinth, and placed between the genera containing the dog's tooth violet and the Star of Bethlehem—the flowers of neither of which remind us of the cultivated hyacinth here shown in Figure 8. The Star of Bethlehem

is directly followed in Gray, by the well-known grape hyacinth. Dr. F. H. Knowlton, the distinguished American botanist, tells us that the hyacinth is originally "a native of the Levant and grows in abundance about Aleppo and Bagdad. The root is a tunicated bulb; the leaves are broad and green; the scape is erect bearing numerous often drooping bell-shaped flowers of almost all colors and both single and double flowered. The hyacinth appears first to have been cultivated as a garden flower by the Dutch about the beginning of the sixth century

It was intro-

duced into England about the end of that century, and is now one of the most popular cultivated bulbous plants."

We have an excellent picture of the well-known orpine or live-forever in Figure 9, and a picture is shown in Figure 10 of its cultivated relative. It is most interesting to note how the flowers and leaves of the former have been changed so as to assume the form they have



WILD STONECROP

Fig. 11. This lovely specimen of Stonecrop (*Sedum ternatum*) grew in rocky woods found about Washington; it is here seen in full flower. Note the little lady fern often seen growing near it.



in the garden species. Neltje Blanchan tells us that "children know the live-forever, not so well by the variable flower—for it is a niggardly bloomer—as by the thick leaf that they delight to hold in the mouth until, having loosened the membrane, they are able to inflate it like a paper bag. Sometimes dull, sometimes bright, the flower clusters never fail to attract many insects to their feast, which is accessible even to those of short tongues. Each blossom is perfect in itself, *i. e.*, it contains both stamens and pistils; but to guard against self-fertilization it ripens its anthers and sheds its pollen on the insects that carry it away to other flowers before its own stigmas mature and become susceptible to imported pollen. After the seedcases take on color, they might be mistaken for blossoms. Rooting freely from the joints, our plant forms thrifty tufts where there is little apparent nourishment; yet its endurance through prolonged drought is remarkable. Long after the farmer's scythe, sweeping over the roadside, has laid it low, it thrives on the juices stored up in fleshy leaves and stem until it proves its title to the most lusty of all folk names."

Botanists tell us that this plant originally escaped from gardens; and if this be true, the cuts here presented of the wild and garden forms come to be all the more interesting upon careful comparison. (Figs. 9 and 10). In the middle Atlantic States we meet with it growing in various localities along the roadside and in old fields, but far more commonly in rocky soil, beneath the spreading limbs of the tall

trees of the forest. It would seem that the authoress of *Nature's Garden* and other popular American botanists have, in their works, almost entirely overlooked the most attractive plant of the entire Sedum or Orpine group—the Stonecrop, *Sedum ternatum* of Gray. Last summer the writer obtained a beautiful negative of this, taking the plant *in situ*. It grew luxuriantly in the little rich earth that had accumulated upon the surface of a great rock found in the woods not far from Washington. In Figure 11 it is shown in full flower, with all of its interesting characters in plain view. This stonecrop occurs in similar locations from Connecticut to Georgia, and from thence westward to Michigan, Indiana and Tennessee. It has flat leaves which are arranged in whorls of three, and the flowers, complicated in structure, are glistening white or sometimes very faintly

cream-tinged. On one occasion the writer found a specimen of this plant that grew over an old, rotten log which leaned among the ferns that partly hid a great rock in the woods. The plant covered a space of fully a square yard, and presented, with its many white flowers and glistening green leaves, a sight long to be remembered.

Of all the plants of the woods, however, none can vie with our *Hepatica* or Liverwort as a favorite. Hardly has the snow melted away before the flowers of this hardy little champion of the plant world are seen peeping up among its own leaves of the previous season. It has received many vernacular names, and among them we hear it referred to as Squirrel Cup; Liver-leaf; Noble Liverwort, and so on. The writer has often made life-size photographs of this pretty little plant, and one of his best results is here seen in Figure 12. It is putting

forth over a dozen flowers, and the form of last year's leaves is very well shown. It is useless to look for this flower beyond where it grows in the loose earth of the more or less heavily timbered hillsides of its range; the plants are usually single, and grow some distances apart. The old leaves persist all winter, while the new leaves, which appear after the flowers, are very beautiful indeed, being closed, curved downwards and folded, and presenting a furry growth on both stems and leaves. As stated, the leaves are ever-green and three-lobed; some are more or less mottled, the color being rusty-red or purplish. What may appear to be the petals of this flower are, in reality, the *sepals*, and next



HEPATICA OR LIVERWORT

Fig. 12. The trilobed leaves of this plant are responsible for its scientific name of *triloba*, while it has many common names, such as liver-leaf, squirrel cup, kidney liver-leaf, noble liverwort, and others.

to them, directly beneath, are three sessile leaves, green like the stems, and furry. Sometimes the flowers of *Hepatica* are quite fragrant, but often entirely odorless, and the petal-like sepals run all the way from a pale blue to white, the intermediate colors being pale pink, lavender and a fine shade of purple. Gibson, the poet, left us these lines on the *Hepatica*:

"Blue as the heaven it gazes at,  
Startling the loiterer in the naked groves  
With unexpected beauty; for the time  
Of blossoms and green leaves is yet afar."

"What an individuality it has!" said John Burroughs, "No two clusters alike; all shades and sizes . . . . A solitary blue-purple one, fully expanded and rising over the brown leaves or the green moss, its cluster of minute anthers showing like a group of pale stars on its little



# MAKING A WOODEN PIPE

**T**HE annual consumption of wood in the United States for use in the manufacture of smoking pipes is close to one-half million feet, board measure, says R. K. Helphenstein, Jr., of the United States Forest Service, in *Lumber*.

French briar is used in the largest quantity by the industry, and represents over 66 per cent of all wood consumed by pipe makers in this country.

French briar or "bruyers," as it is often spelled, is a small tree belonging to the heath family. It is found in commercial quantities in Southern France, Italy, and a number of other countries bordering on the Mediterranean Sea. Only the root of the briar is used for

ply comes principally from North Carolina, laurel is abundant in many other regions.

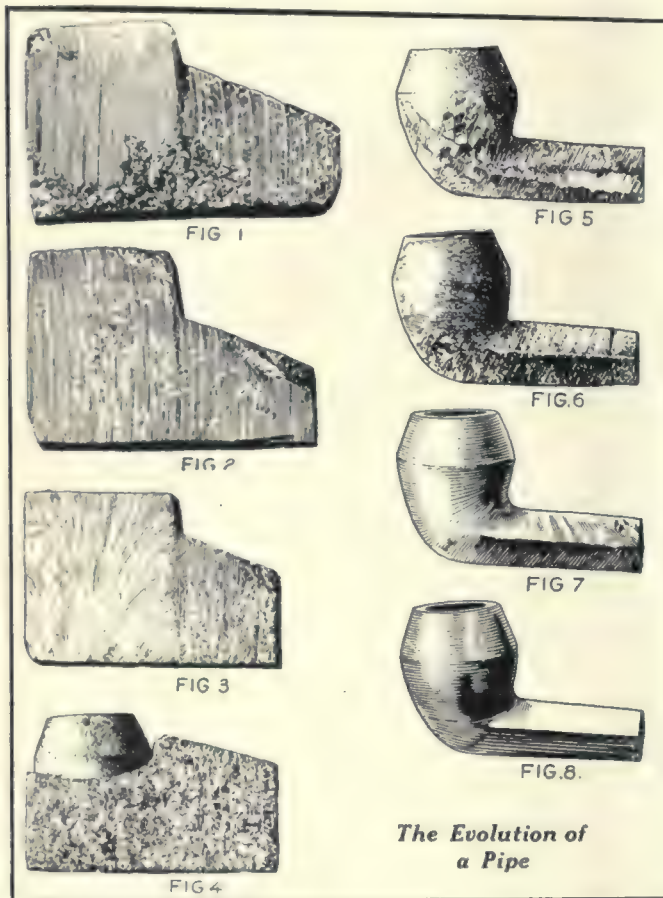
Applewood is also employed for pipes, its chief value being its attractive color, which is darkened by long steaming at low pressure. The raw material is obtained from old orchard trees which have ceased to bear fruit. A little red gum and some birch are also used by the industry, but only for very cheap pipes. In addition, a small quantity of ebony, olive wood, and other rare imported species are employed.

The pipe maker is extremely particular in his selection of raw material, especially for pipes of the highest quality. A rich dark color is an important requisite, but this may be obtained artificially if the wood does not already possess it. The finished pipe is of some dark shade, usually a rich mahogany. As a rule, French briar and mountain laurel require little artificial coloring to make them suitable for pipe manufacture.

An essential quality in pipe material is the ability to burn slowly. In addition, the wood must be more or less brittle, with a tendency to crumble under the cutting impact of the tool. Any inclination to split renders the wood unsuitable for use. It must cut the same in all directions in order that a smooth surface may be obtained. Soft porous woods with well-defined annual rings of growth are undesirable, for the reason that the bands of pores offer less resistance to cutting tools than those in hard denser woods, and a rough uneven surface is the result. This is especially true in the case of pipes which have the bowl and stem made all in one piece. A number of high grade pipes are manufactured in this form, the hole through the stem being made with a fine drill. This is a difficult operation and if there is a soft porous band present in the wood the drill is likely to follow it and spoil the piece. The almost total absence of growth rings in laurel and French briar makes these two species especially valuable to the pipe industry.

English and French pipe manufacturers own land in the briar-producing regions and maintain warehouses and small workshops on or near their holdings, to which the freshly cut roots are shipped. When received they are washed, boiled and roughly shaped. They are then sorted by size, quality and color and shipped to France, Great Britain and other countries for manufacture into pipes.

American pipe manufacturers using French briar receive their raw material in the form of roughly cut pipe blanks. In the case of mountain laurel the stock is shipped direct to the pipe manufacturers in the form of roots or burls. They are cleaned and sawed into blocks of various sizes and shapes, and the blocks then pass through numerous machine operations until the finished article is produced. The attached sketch shows the evolution of a high grade pipe bowl.



pipes, but in Italy there is followed the practice of cutting each year the long, tough young shoots, which are bound together and sold to manufacturers of street brooms. Aside from this the plant is allowed to grow for three or four years, when the roots will have developed sufficiently to permit cutting for pipe stock, enough of the plant being left to provide for future cuttings at three-year intervals.

Second in importance among the woods used for pipes in this country is kalmia, better known as mountain laurel. As in the case with French briar, only the root is made into pipes. Though the commercial sup-



# THE BIRCHES

By J. S. Illick

THERE are thirty-five different kinds of Birches in the world. Fifteen of them are native to North America. Nine of these become trees while six reach only shrub size.

The Birches belong to the group of trees known by the scientific name of *Betula*. Some claim that this word was derived by the great naturalist Pliny from *bitumen*; others claim it is derived from *betu*, the Celtic name for birch. There are still others who insist that it is derived from the Latin word *batuere*, which means "to beat." The latter belief has followers because the fascies of the

only kind of Birch native to North America that contains this oil in sufficient quantities to justify its distillation for commercial purposes. The oil is similar to that distilled from the small shrub called wintergreen.

Formerly the distillation of birch oil was in the hands of poor and rather indolent, and often illiterate, mountaineers; the same class that digs ginseng, picks huckleberries, pastures bees and trespass on the lands of others without the slightest prick to their conscience. In the early days one could find small birch oil stills scattered throughout the woods over the entire range of the Black Birch. Then the operators were wasteful to the extreme. They felled thrifty young trees as well as defective specimens, regardless of the effect that the cutting had upon the future development of the forest. Their stills were so crude and defective that only a small portion of the available oil was extracted. Now modern equipment is being used and much greater care is given to the forest growth. The business is now in better hands, but it is still wasteful and little thought is given to forest conservation.

Many a farmer living near the mountains now spends his winter months in the nearby forest operating at a profit a small birch oil still. In 1890 the oil sold at \$1.80 per pound. Then it rose to \$3.00 and \$4.00 a pound, and during the war it went as high as \$6.00 and \$8.00 a pound, and retailed from 50 to 80 cents an ounce.



A THRIFTY AND PROMISING STAND OF BLACK BIRCH

Roman lictors, used to drive back the people, were always made from Birch rods.

There is a legend that one dwarfed variety of Birch has never regained its original erect form and size after Christ was beaten with sticks that had been taken from it. The Russian peasants believe that the Birch tree is a symbol of good health, and it is not unusual to find peasants who permit themselves to be flogged with Birch switches until they perspire. This form of sport is unquestionably robust and goes under the trade name of "sweat bath."

Superstitious peoples in times past have depended upon the power of the Birch tree to guard them against lightning, wounds, gout, and the evil eye. The medicinal value of the Birch is not entirely a superstition, for the Black Birch, also known as Sweet Birch and Cherry Birch, contains in its inner bark an oil which is used rather extensively for flavoring and as a remedy for gout, rheumatism and pulmonary troubles. The Black Birch is the



A BIRCH OIL STILL IN THE BACKWOODS OF PENNSYLVANIA

The Black Birch has a long list of common names. It is more fortunate than many other trees for most of them are appropriate. It is called Black Birch because the bark of the trunk is very dark. It is more distinctly black than that of any other birch tree. It is also called Sweet Birch because the inner bark of the young twigs





THE BARK OF YOUNG BLACK BIRCH TREES IS SMOOTH AND DOES NOT PEEL IN PAPER-LIKE LAYERS

has a pleasant and aromatic taste, which distinctive feature has made this tree well known among every country dweller throughout its entire range. The name Cherry Birch was given because of the general resemblance of the form of the tree and its bark to that of the Wild Black Cherry. Other less common and less appropriate names are River Birch, Mahogany Birch and Mountain Mahogany.

The Black Birch ranges from New-

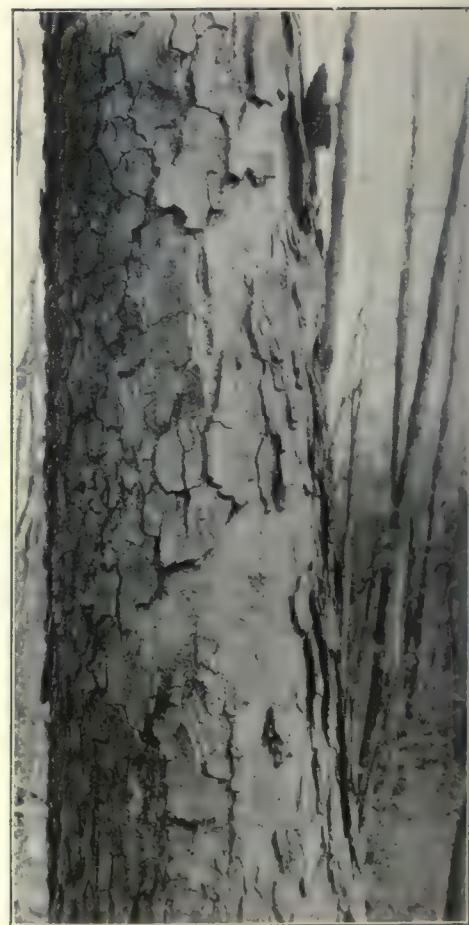
foundland to western Ontario, south to Indiana, and along the Appalachian Mountains to North Carolina and Tennessee. It reaches its best development in southern Ontario, northern New York, northern Pennsylvania and the northern peninsula of Michigan.

This tree reaches a height of 70 or 80 feet, and a diameter of from two to three feet. It prefers rather deep, moist soil, but will grow on relatively dry and rocky ground. In the southern part of its range it is not unusual to find it upon rocky outcrops, on mountain tops, and along rough mountain slopes. It does not grow upon such situations by preference, but because its light seeds were scattered over the rocks by myriads, and some of them fell on fertile soil between the rocks, and others landed upon the little accumulation of soil that happened to occur in rock crevices. There they established themselves, while other trees, with larger and less buoyant seeds, could not get a foothold.

The Black Birch can be distinguished from all other species of birch by its close blackish, cherry-like bark, which does not peel off into film-like layers. The young seedlings come into existence with smooth bark, but it does not last long for as age increases the bark becomes rough and black. Upon old specimens it breaks up into stiff, rigid and rather thick flakes, but does not shed in papery rolls like the bark of the River Birch, Yellow Birch and Paper Birch, with which it is frequently associated. It resembles the Yellow Birch more closely than any other Birch, but the latter has a distinctly yellow bark which peels off in thin, film-like layers.

If all other means of recognition fail, the Black Birch can always be identified by the wintergreen-like flavor of the twigs. This is absent in all other birches. The Black Birch is sometimes tapped for its sap just as is the Sugar Maple. The sap flows even more freely than that of the maples. It is reported that as many as two tons of sap have flown forth from a medium-sized tree in a single season. The sap, however, is used for a different purpose than that of the Maple. It is made into a beer which has some commercial value, and is used rather freely in some localities. It is reported that one of the ways of preparing it is to jug the sap, put in a handful of shelled corn, and then let fermentation do the rest of the job.

The wood of the Black Birch had few uses in the early days. Fuel was then one of its chief uses. The pioneer lumbermen had little to do with it, for the lumber was hard to saw and rather difficult to season, and it warped so badly that it taxed the lumberman's patience and ingenuity. The wood is rather heavy, strong, hard and a large number of



ON THE CONTRARY THE BARK OF OLD BLACK BIRCH TREES BECOMES ROUGH AND PEELS OFF INTO IRREGULAR AND STIFF SCALES



uses are now being found for it. Among its principal uses are furniture and interior finish. It is quite frequently substituted for Cherry, and occasionally for Hickory, and large quantities are made up in imitation of Mahogany.

The Black Birch grows rather slowly, but it may be classified as one of our important forest trees. The demand for the wood is annually becoming heavier, and the supply is rapidly diminishing. It is well adapted for planting in parks, and on home grounds, for in the open it develops a wide symmetrical crown which is quite attractive.

The Red Birch is also called River Birch. This is an appropriate common name, for the tree is usually found along the banks of rivers and on the border of swamps. Other common names are Water Birch, Blue Birch, Black Birch and sometimes it is simply called Birch. The name Red Birch refers to the color of the inner bark, which is made visible by the peeling off of the bark. The trunk of the tree and the larger branches are continuously getting rid of their outer bark and in doing so the outermost layers are rolled back, hang for a while, and are then gradually broken loose by the wind.

The inner bark, which is exposed in this process of bark shedding, is distinctly red in color. The color,



Photograph by courtesy U. S. Forest Service  
CLUMP OF PAPER BIRCHES ON THE SAND AT JUNIPER BEACH, MICHIGAN



THE RIVER BIRCH IS CONTINUOUSLY GETTING RID OF ITS OUTER BARK. THIS CASTING OFF OF THE BARK UNCOVERS THE REDDISH INNER BARK, WHICH IS ONE OF THE BEST DISTINGUISHING CHARACTERISTICS OF THE TREE

however, varies considerably, sometimes suggesting the tint of old brass, and again it may be brownish in color. The name "Black Birch" is not appropriate for this tree, for the bark is not black, excepting near the ground on real old trunks. This tree clings as closely to water courses and other wet places as the Sycamore, and consequently both the names River Birch and Water Birch are quite appropriate.

The range of the River Birch is less extensive than that of the other important birches of the eastern United States. It is, however, by no means limited for it occurs as far north as Massachusetts, extends west to Minnesota, and is found southward along the coast to Florida and west to Texas. It occurs on an area of nearly 1,000,000 square miles, but it cannot be said that it is abundant everywhere within this area. There are thousands of square miles within the limits of its range upon which not a single tree may occur, while in other places, especially along streams and about ponds, it is very com-



mon and locally it is abundant. Nature seems to have made wise provisions when it provided for the ripening of the seeds of the River Birch in early summer. Then the rivers are low and the seeds are scattered by the millions on the muddy shores and upon the slow flowing water. Those that happen to fall upon the mud find a suitable place upon which to germinate and establish themselves, while those that drop upon the water float away with the current and lodge upon the soil in favorable places along the shore. Before the high water of late autumn and early winter comes along they are well rooted in the mud and sand, and ready to put up a fight for their lives.

The River Birch may be spoken of as a soldier tree, for it must continually battle for its existence because of its location. Each time the streams rise it must withstand the force of the rapidly flowing water and the batter of the debris that floats upon the surface of the water; and each spring, as the icy covering of our streams breaks up into sharp-angled ice cakes that float rapidly and in

great masses towards the sea, many thousands, in fact millions of River Birch trees lose their lives, and additional millions are damaged beyond recovery. Year after year they fight for a place on the shore, and it seems as if they were gaining rather than losing their position.

The River Birch has a number of striking distinguishing characteristics. None of them is more conspicuous than the reddish-brown to cinnamon-red bark which is covered with thin, film-like layers. In addition to this position, the hairiness of the small twigs and the color of the leaves is also helpful in identifying this tree. The

base of the leaf blade is wedge-shaped, a characteristic present but not so pronounced in other birches.

The River Birch trees sometimes attain a height of 80 or 90 feet, and range in diameter from two to four feet. Frequently they fork out about 15 or 20 feet from the ground and send up several stout secondary stems.

The wood is among the lightest of the birches. It weighs, when dry, only 36 pounds per cubic foot. It does not have a wide range of uses, but it is manufactured into plain furniture, wooden ware and kitchen

utensils. Wooden shoes are also made from it, and locally, in the southern states, it is cut up into veneer used in the manufacture of peach and potato baskets, and in the backwoods barrel hoops are also made from it. In the rafting days on the Susquehanna River in Pennsylvania, when millions of White Pine and Hemlock logs were brought down this great stream in rafts, the logs were lashed together with "lash-poles" made almost exclusively of River Birch.

The Red or River Birch may not be classified

among the most important forest trees of the United States, but it is of considerable economic importance, because it is adapted to wet places and will grow well on the banks of rivers. Few other trees are so well adapted to wet places, and it is one of the best trees to make productive many swamps and other wet places that are now producing nothing of value.

There are two distinct kinds of birch trees with white bark native to the northeastern part of North America. The one has been given the name of Paper Birch or Canoe Birch, and the other is usually called White Birch.



A VETERAN RIVER BIRCH. IT IS OVER FOUR FEET IN DIAMETER, AND DIVIDES ABOUT TWELVE FEET FROM THE GROUND. THE BARK ON REAL OLD SPECIMENS OF RIVER BIRCH BECOMES DEEPLY FURROWED AND BLACK, WHICH MAKES THE VARIETY EASILY DISTINGUISHABLE



Among the other common names of the latter tree are Grey Birch, Poplar-leaved Birch, Old Field Birch and Poverty Birch. It is called White Birch because of its white bark which is marked with triangular black spots located at the origin of lateral branches.

The leaves of this tree resemble those of the Poplars or Aspen, whence the name Poplar-leaved Birch and the specific part of the scientific name *populifolia*. It is called Old Field Birch because it is so common in old, abandoned fields of the northeast, and the name Poverty Birch was given to it because it is often present in large numbers upon very poor sites.

No more adaptive tree than the White Birch is known. It thrives along the banks of lakes and streams, and withstands the rigors and deficiencies of a dry and rugged mountain top. It and the Pitch Pine are among the few trees that are able to maintain themselves upon the sterile refuse that is thrown out on huge piles in all parts of the anthracite coal mining region.

The White Birch usually attains a height of 20 to 30 feet. Sometimes it becomes 45 feet high, and 10 to 12 inches in diameter. It is a short-lived tree that grows rather fast. It is found from Nova Scotia to Ontario and southward to Delaware and southern Pennsylvania.

There is no other tree in the forest of the northeast with leaves like that of the White Birch. They are triangular in outline, taper gradually and gracefully from a broad base to a thin, long point, and the leaf-margin is sharp-toothed. The long, slender leaf-stalks allow the leaves to be fluttered by every breeze, until the whole tree often becomes a mass of glimmering green. Marshall gave this tree the appropriate scientific name of

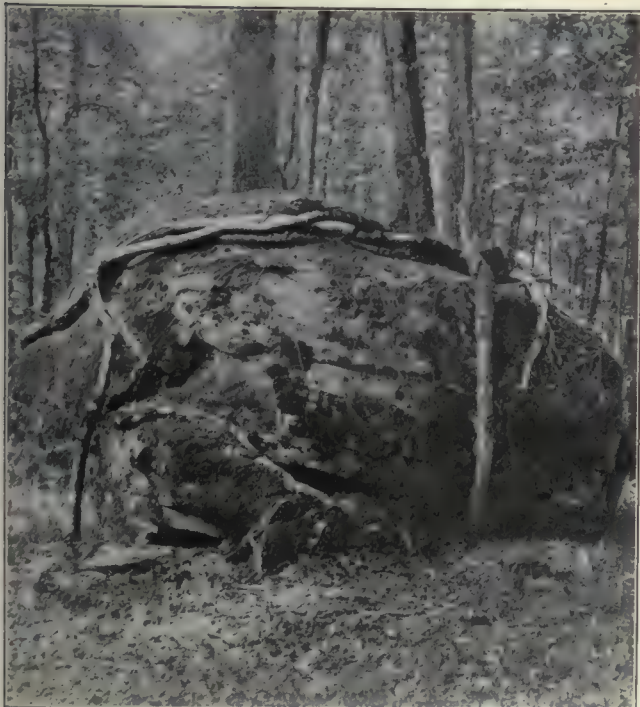


THE WHITE BIRCH IS A SHORT-LIVED TREE. IT IS ATTACKED HEAVILY BY FUNGI. SOMETIMES AS MANY AS 100 SHELF-LIKE FRUITING BODIES OF A FUNGUS MAY BE SEEN ON A SINGLE TREE STEM

*Betula populifolia*, which means Poplar-leaved Birch, for the trembling habit of the leaves is truly characteristic of the Poplars or Aspens.

The White Birch usually has a continuous trunk, that is, it does not branch near the ground or along the stem, but its main stem continues all the way to the tip. Another characteristic by which this tree may be recognized is its occurrence in clumps. It is not unusual to find four or five, or often ten, stems in a clump. A close examination of the ground usually reveals an old stem in the midst of these clumps, showing that they all originated as sprouts from a solitary trunk which may have died from the result of an attack by insect or fungi, or it may have been killed by a forest fire.

The White Birch is singularly attractive, unusually adaptive, and easily propagated. If little seedlings are set out one can be reasonably sure that they will grow, but one must not be disappointed if the seedlings do not have the white bark, so characteristic of older specimens, for it is characteristic of this tree not to develop a white bark until the trees are two, three or more inches in diameter. The bark of young specimens is golden brown, which accounts for the fact that this tree when young is often spoken of as the Golden Birch.



BIRCH TREES SOMETIMES GROW ON HUGE BOULDERS. THE LITTLE SEEDLING TREES START THEIR DEVELOPMENT ON TOP OF THE BOULDERS BY SENDING OUT ROOTS WHICH FOLLOW THE MOIST, MOSSY COVERING UNTIL THEY REACH THE MINERAL SOIL





THE WHITE BIRCH IS NOT PARTICULAR. IT WILL GROW ON THE CULM OR REFUSE BANKS IN THE ANTHRACITE COAL REGION OF PENNSYLVANIA

There is little likelihood of confusing the Yellow Birch with any other tree as it stands in the forest. It is easily recognized wherever it grows by the ragged, yellow bark which peels off in thin, film-like, papery scales.

It has such an individuality that there is little need of studying its leaves, flowers and fruits to find a way to recognize it. Its method of peeling the bark resembles



THE WHITE BIRCH MAY BE DISTINGUISHED BY ITS WHITE BARK COVERED WITH TRIANGULAR BLACK SPOTS AT THE ORIGIN OF THE LATERAL BRANCHES

that of the Paper Birch and Red Birch, but it does not have the white color of the former or the reddish to greenish color of the latter. The scales of the Red Birch are thicker and smaller than those of the Yellow Birch, and those of the Paper or Canoe Birch are larger and more paper-like.

In some places this tree is spoken of as Silver Birch, while in other localities the name Grey Birch or Swamp Birch is used. The name Swamp Birch is quite appropriate, for the tree usually grows best in wet situations. Its geographical range is bounded by a line drawn from Newfoundland to northern Minnesota, southward to the Lake States, and along the Atlantic Coast to Delaware, and along the Allegheny Mountains as far south as North Carolina and Tennessee.

The twigs of the Yellow Birch resemble those of Black



THE WHITE BIRCH OFTEN GROWS IN CLUMPS. THE BARK CAN BE PEELED, BUT WHEN ONCE REMOVED IS NOT RENEWED

Birch, but they lack the sweet, wintergreen flavor of the latter. The bark on the trunks of the closely associated Black Birch is close-fitting, blackish, cherry-like, and does not peel off in thin layers.

The Yellow Birch is one of the important timber trees of the Northeast. It is propagated easily, has few insect enemies, and produces valuable wood used extensively in the manufacture of furniture, vehicles, flooring, boxes, veneer, pulp, chemicals and fuel. Birch broom handles have been a commodity on our markets since the first lathe went to work making them. They are made of all

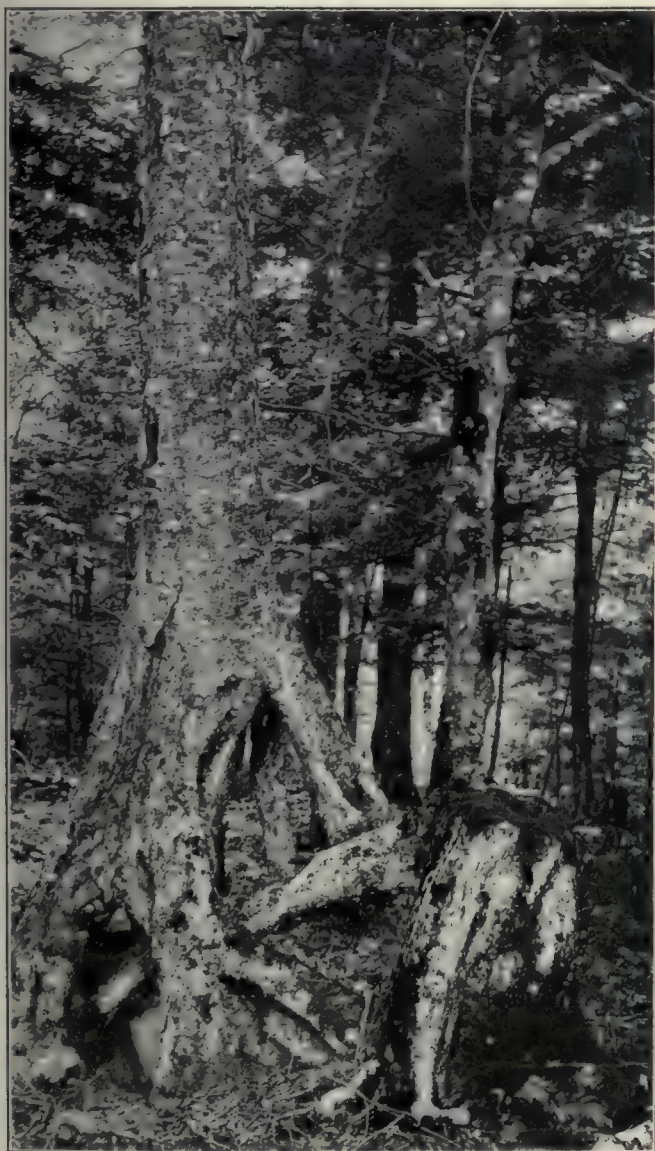


kinds of birch wood, but the Yellow Birch contributes the greater part.

The Paper Birch, also known as Canoe Birch and White Birch, is also a tree of the Northwoods. It is called Paper Birch because the bark peels off in thin, paper-like scales. The name White Birch refers to the white color of its bark, and the name Canoe Birch was given to it because the Indians and early settlers used this tree in the building of canoes.

It grows as far north as Arctic British America, extends east to Labrador, south to Michigan and Pennsylvania, and reaches west nearly to the base of the Rocky Mountains. Some believe that the white-barked birch tree of Alaska is simply a variety of the Paper Birch. If this be true, the Paper Birch is a trans-continental tree with a range of at least one million square miles. It is very abundant in the great forest regions of Minnesota and the northern United States where it frequents the banks of lakes and rivers and is regarded as one of our most beautiful and characteristic trees.

The Paper Birch is one of the best known trees in range. Every



A YELLOW BIRCH THAT BEGAN ITS LIFE UPON A FALLEN TREE TRUNK. AFTER THE SEEDS GERMINATED IT SENT DOWN ROOTS ON THE SIDES OF THE LOGS UNTIL THEY REACHED THE GROUND AND THUS THE TREE ESTABLISHED ITSELF AND NOW CONTINUES TO GROW

school boy and girl knows that the bark of this tree was used in the building of canoes by the Indians and early settlers, and everyone who has had the privilege of roaming through the Northwoods will forever remember its chalky and creamy white bark which peels off in thin, film-like, papery scales. In addition to its white and loose bark, it may be recognized by its broadly oval leaves with short, stout leaf-stalks.



THE YELLOW BIRCH CAN ALWAYS BE DISTINGUISHED BY ITS DISTINCTLY YELLOW BARK WHICH PEELS OFF IN THIN, RAGGED, FILM-LIKE LAYERS. THIS BARK IS OFTEN USED BY CAMPERS TO START CAMP FIRES ON WET DAYS

The fruit spikes are short-stalked, cylindrical, and usually droop; while those of the other birches, as a rule, stand erect.

Not so large a number of specimens of Canoe Birch can be found as of the White Birch, but it reaches a larger size, produces better wood, and is far more attractive. The quantity of Paper Birch that still remains is unknown, but it probably exceeds that of any other



single species of birch. The largest use of its wood is for spools—the common kinds—that are used for thread. Some larger sizes of spools are also made, but most of them are of the small size. Tooth picks, shoe pegs, and shoe shanks are other important articles made from Paper Birch wood.

Of the thirty-five different kinds of Birch trees known in the world, twenty-five reach tree size somewhere within their range. Some of them reach tree size in the southern part of their range, but remain quite small toward the northern limit of their growth. The birches that venture to-

wards the Arctic Circle remain quite small, some of them not exceeding twelve to eighteen inches in height. The five species described in this article are the only

ones of real commercial importance in North America. Others, such as the White Birch of Alaska and the Western Birch, also reach a size of 75 or more feet in height, but because of their limited range and inaccessible location are now of little commercial importance. The obvious distinguishing characteristics of the five com-



Photograph by the U. S. Forest Service.

THE RANGE OF PAPER BIRCH IN THE UNITED STATES IS INDICATED BY THE AREA NORTH OF THE BLACK LINE.

mercial birches of eastern North America are given in the following table:

NAME	BARK	LEAVES	FRUIT	TWIGS	OCCURRENCE
Black Birch or Sweet Birch	Dark reddish brown. Does not peel off. Resembles Cherry bark. Inner bark has wintergreen-like taste.	Ovate, usually heart-shaped at base. Dark green above; pale green below.	Smooth, erect, cone-like strobile, 1 1-2 to 2 inches long.	Smooth, shiny, reddish-brown, with wintergreen flavor.	Rich soil and dry rocky mountain slopes.
Yellow Birch	On young stems smooth, shiny, golden yellow. Peels off in thin, film-like yellowish layers on larger trunks and branches.	Like Black Birch, but has larger teeth and is firmer in texture. Leaf-stalks often very hairy.	An erect, ovate, short-stalked, cone-like strobile, 1 to 1 1-2 inches long.	Dull, silvery gray to brown, usually smooth, sometimes hairy. Rather bitter.	Prefers borders of streams and swamps.
Red Birch or River Birch	Reddish-brown. Peels off in ragged scales. Becomes rough on old trunks.	Broadly ovate. Deep green above, pale yellowish-green below. Leaf-stalks often hairy.	An erect, hairy, cylindrical, cone-like strobile, 1 to 1 1-2 inches long.	Slender, smooth to hairy, and reddish-brown.	Usually found along rivers and streams and in other wet places.
Paper Birch or Canoe Birch.	White outside, and brown within. Peels readily into thin papery scales.	Oval in form, with round or wedge-shaped base. Leaf-stalks short and hairy.	Short-stalked, cylindrical, cone-like strobile. About 1 1-2 inches long.	Rather stout somewhat viscid, decidedly hairy, reddish-brown.	From rich wooded slopes to swamps.
Grey Birch or White Birch	Chalky white, dotted with triangular black spot just below origin of lateral branches. Doesn't peel off.	Triangular in form, with long-tapered point.	Slender, short-stalked, cone-like strobile. About 3-4 of an inch long.	Rough, dull, greenish to brown.	Usually occurs in moist and wet places. Sometimes found in dry, rocky situations.



Few trees are better equipped than the birches to perpetuate their kind. They are abundant seeders, and the seeds are small, light in weight, well-winged, and are scattered over long distances by the wind. It may seem incredible, but it is true, that by actual count it has been found that there are 711,680 seeds of Paper Birch in a pound. The Black Birch and Yellow Birch have from 400,000 to 500,000 seeds per pound.

Of course, the seeds produced by these trees do not always fall upon favorable places. Some of them do not germinate, while others perish soon after they have been dropped. It is fortunate for the trees that they are not



THE LEAVES, FLOWERS AND FRUIT OF THE BLACK BIRCH ARE DISTINCTIVE. ITS SEEDS ARE SMALL AND WELL-WINGED. THERE ARE AT LEAST 400,000 SEEDS TO A POUND

particularly choice in selecting places upon which to grow. They will grow on poor, mineral soil, thrive in old fields, get along in places where they are flooded with sunlight, and will even maintain themselves in deep shade where only occasional beams of sunlight touch them.

Nature seems to help the birch trees, for if one examines a mature tree late in fall or early in winter, there will be noted upon it many cone-like bodies about an inch long. These are the fruiting bodies. Many of them stand erect, and remain intact for a long while with thousands



LEAVES, FLOWERS AND FRUITING BODIES OF THE RED OR RIVER BIRCH



THE WHITE OR GREY BIRCH HAS POPLAR-LIKE LEAVES, ERECT FRUITING BODIES, AND ITS FLOWERS APPEAR WITH THE LEAVES



of seeds carefully stored away within them. After the snow falls, and with the alternate thaws and freezes, these fruiting bodies begin to break apart and liberate the seeds. The wind drives the tiny but well-winged seeds in every direction. Many of them land upon the snow, where they rest until the snow melts, and with

form on large rocks or boulders. This unique root development may be explained by the fact that a birch seed fell in the moss covering the rock, began to germinate, and the roots descended the side of the rock until they reached the ground, and as the rock did not decay or disintegrate the tree continued to grow to maturity over the rock with the base of the tree trunk often ten feet above the ground.

The birches as a group occupy an important place in the northwoods. Many useful commodities are made from their wood, and they serve a wide range of other uses. They appear to be defending themselves against the aggression of other forest trees, because nature has provided them with a strong defensive weapon, in that all of them produce enormous quantities of seeds, and the resulting seedlings can adapt themselves to a wide range of growth conditions.

We need the birch tree in the northwoods, and with the increased protection that is being given to our forests, it seems fair to assume that the birches will play an important role in the future management of the forests of the Northeast.



THE PAPER BIRCH IS THE QUEEN OF THE NORTHWOODS. ITS LEAVES, FLOWERS, FRUIT AND WINTER TWIGS ARE DISTINGUISHING CHARACTERISTICS

the melting snow are carried down between the rocks and land on mineral soil. Here they germinate and establish themselves in places not reached by other larger and heavier seeds.

In the northwoods it is not unusual to find birch trees, particularly the Yellow Birch, standing on high, spreading roots, two, three, or even six feet above the ground. This unique condition is brought about by the manner in which the small seedling trees grow. The seed falls on moss covering the top of a log or stump. The moss retains much moisture, and after the seed germinates the trees grow and send their roots down the side of the log or stump until they reach the mineral soil in which they become firmly fixed. In time the log or stump decays, and the spreading roots continue to support the trunk several feet above the ground. This unique root development of the Yellow Birch is quite common in the northwoods. Occasionally one finds the same growth

## FROM WILD TO GARDEN FLOWERS

(Cont'd from page 353.)

firmament, is enough to arrest and hold the duller eye. Then, . . . there are individual hepaticas, or individual families among them, that are sweet scented. The gift seems as capricious as the gift of genius in families. You cannot tell which the fragrant ones are till you try them. Sometimes it is the large white ones, sometimes the large purple ones, sometimes the small pink ones. The odor is faint, and recalls that of the sweet violets. A correspondent, who seems to have carefully observed these fragrant hepaticas, writes me that this gift of odor is constant in the same plant; that the plant which bears sweet-scented flowers this year will bear them next."

Long will the name of John Burroughs live, and long will live the lovely things he said and penned about our birds and flowers.

**E**ACH acre of walnut trees in bearing will produce every year food approximating 2,500 pounds of beef.—*The North Woods*.

**T**HE California State Board of Forestry has acquired 30 acres of land on which they are raising trees for highway planting.

*Give fools their gold, and knaves their power  
Let Fortunes bubbles rise and fall,  
Who saves a field, or trains a flower  
Or plants a tree, is more than all.*

WHITTIER.



# Tree Stories For Children

## The Gift of the Olive Tree

By Mary Isabel Curtis

Minerva was the goddess of wisdom, and being so very wise she knew that war, even though it was sometimes necessary, was a dreadful thing. Minerva had another name. The Greeks called her Athena; and they called the god of the sea Poseidon.

Now the Greeks had just built a new city to be the capital of their country, but they had no name for it. Poseidon thought it should be named for him because as the city was on the sea-coast it would doubtless send out many ships over which he would have charge. But Minerva-Athena felt that she should have the honor of naming the city because she was so wise that she would know just how to care for it in the best way.

At last, in order to settle the dispute, the gods called a meeting and decreed that the city should be named for that claimant who could give the most useful present to the people of the Earth.

"Oh, then it will be named for me," said Poseidon, "for nothing can be more useful than the present I shall give."

Feeling perfectly certain that he had won the contest, he struck upon the earth with his trident. As he did so the ground cracked a little. From the crack there sprang a splendid coal-black horse who dashed around so actively that all the gods became a trifle nervous and moved a few steps further back.

Then it was Minerva-Athena's turn to show what she could do. She picked up a spear and struck upon the ground with it. At once a beautiful gray-green olive-tree full of fruit appeared.

The gods considered the two presents. They decided that though the horse was more useful in war, the Greeks preferred peace to war, and the olive-tree which was the sign of peace and fertility was, after all, a higher gift to man.

So they named the city for Minerva-Athena. They called it Athens. And the people of Athens built the goddess a beautiful temple on a hill—a temple so beautiful that travellers from all over the world still go to see it and marvel that the Greeks could build so perfectly.





# BOYS PLANT THE BURROUGHS FOREST

By T. R. HUTTON

"SEVEN, up half a foot—nine, back—10, 11 and 12, come up on the line. Center back—throw 'em in!"

A dozen mattocks rose and fell to the click of steel on the buried rocks of an abandoned mountain pasture, and the boy who had called the signals went up the sharp slope to take the new alignment from another boy well back along an undulating line of newly planted Scotch Pine.

The mattock men moved forward with two brisk strides, dropped broad heads to their tools on the ground where the second stride took them and stepped back a half pace while the linesman chanted off his corrections, peering along the numbered mattock handles. In the rear a second row of boys with pails full of treelings moved up to the newly made holes, planted, packed the



UP ON THE LINE

Boys of eleven state and five nations, members of the Raymond Riordon School, resting from their labors.

earth with a final pressure of the foot and stepped forward behind the mattocks, to the last line of trees in the New York State John Burroughs Memorial Forest.

Flat on their backs where they had finished, their tools thrown in a loose pile, the mattock men awaited them, worn out by the final spurt up the mountain side. When the last tree had been patted into place there was a long silence until a cheerful cherub from Pittsburgh remarked with a grin:

"Now sposin' we had to go take them all out again?"

An arm encased in a checkered lumberjack shirt reached over and pulled him on his ear.

"Yo shut up an' rest, son," remarked its owner in a comfortable Georgia drawl. "We got a heap of packin' to do when we get down to camp."

And that was all the fuss that the Conservation Unit of the Raymond Riordon School made about the finish of its big job for the state of New York on the John Burroughs memorial forest.

If they had planted a thousand trees perhaps they might have been excited over the finish, but because they had planted upwards of 16,000 white spruce and Scotch pine three year olds in less than a week it was sufficient to know that the job was done and well done.

Two weeks later Ellis B. Staley, the new Conservation Commissioner for the state of New York, formally accepted the forest and the tablet that marks it, in a simple little ceremony high on the shoulder of Rose Mountain west of Kingston in the Catskills, and in the name of the Chief Executive of the state pledged the perpetuation by a sovereign people of the work begun by these boys of 11 to 19. The big point in the planting of the John Burroughs memorial forest escaped the attention of the lay press. No one would have seen it quicker than the great naturalist himself, but unfortunately for the world those keen eyes are closed, save as we see through them the truth of nature in the imperishable pen pictures he left behind.

The big point was not that 26 boys had through a week of snow and rain and cold planted 16,000 trees above the clouds on the shoulder of Rose Mountain.

It was not that they had taken on a work of honor for a great state—but that they had left behind them row on row of well run lines of spruce and pine.

The accent should not have been placed upon the fact that the State of New York through these boys had achieved the most fitting memorial possible to the great man who had gone on, in the springtime he loved so well. The fact that escaped notice at the time was this:

*For the first time in history a strictly college preparatory school produced a unit of boys who by their very work have demonstrated the practicability of a conservation unit for every college preparatory school whether public or private in the United States.*

And what does this mean to us, to whom the "harvest of the hills" is so very vital?

Briefly, it means this—that by the proper amount of effort rightly directed there should be established in a majority of preparatory schools throughout the United States groups of boys operating as conservation units outside the classroom and thereby learning the great lesson that the men and women of tomorrow must appreciate if America is to survive as a land of production.

Oh, but it will be a long struggle. That work on the side of Rose Mountain merely gave us the opening. There will be objections, regional, professional, pedagogical and otherwise—I am afraid that they will be mostly pedagogical.

And the fight will be longer, drearier and wearier unless this fundamental is accepted at the outset and made a part of the national consciousness:



CONSERVATION IS A MATTER OF EDUCATION AND THE EDUCATORS OF THE COUNTRY ARE RESPONSIBLE TO THE COUNTRY FOR THE PRACTICAL TEACHING OF CONSERVATION TO THE MEN OF TOMORROW.

The problems of the day are the things in which our young must be educated. This is no attempt at a pedagogical discussion. It is just a plain statement of facts.

Conservation should not be a matter for the Ladies' Aid Society, the Masons, the Knights of Columbus, or the Fire Department. Conservation is a strictly educational proposition, and the teaching of it to young America should be within the jurisdiction of the State Department of Education advised by and co-operating with the State Conservation Commission.

"But it will require experts that are outside the curriculum!" objects this or that head master or school principal.

Can anything that is necessary for a boy to know be outside the curriculum? Are we teaching boys life or are we stuffing them at the expense of citizenship?

So much for your curriculum—and now for the expert. Insofar as your city schools are concerned make your city forester responsible if you wish, or, if it is to be a strictly departmental proposition, how will the cost of a supervisor of conservation compare with the cost of a supervisor of drawing or so-called manual training?

"But the cost of materials?" It is objection number two.

This is the cost of the crew of twenty-six boys who planted the Burroughs Memorial Forest:

#### *Materials.*

12 Mattocks at \$2.00.....	\$24.00
2 Axes (double bit) at \$3.50.....	7.00
12 Pails (galvanized iron) at \$.30.....	3.60

Trees furnished by state.	Total \$34.60
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Where boys go a distance from their schools to state lands additional equipment is necessary as well as food. The boys of the Burroughs Memorial Unit were fed at the rate of sixty-five cents a day and well fed throughout. Two boys were detailed as cooks at camp while the others worked on the planting lines. The food was on time to the minute each meal. The additional equipment and cost is given herewith:

#### *Camp Equipment.*

Three pyramidal tents (State should furnish these, but cost is given)....	\$90.00
Cooking equipment:	
Pipe grate 2x4, bolted together.....	2.00
Six aluminum pails at 40c.....	2.40
Drip pan—25 man size.....	2.00
Two frying pans (14 inch) at \$1.50..	3.00
Cooking knives, ladles, can opener, spoons, etc. ....	5.00
Outside possible cost.....	\$104.00
Probable cost .....	14.00

The boys furnished their own mess kits, canteens, cups and blankets and slept in straw purchased from a farmer at Big Indian. The cost of haulage, straw, etc., was \$15. The state paid for the haulage of the trees.

On the basis that the state furnishes the tentage, as in the case of the Burroughs Memorial Forest where Lt. Col. William L. Burnett of the First New York Infantry made it available, the total cost then, for equipment, housing and feeding of a 26-man unit for one week on state lands is something less than \$200—considerably less.

It is not a question of "Can we afford that kind of education?" the point is—how can we possibly afford to disregard it?



#### HEADQUARTERS OF THE PLANTERS

A vista of the camp through the trees by the side of the stream.

We teach biology—here it is in practice. We teach civics—here is service to state and nation in its best manifestation. We teach hygiene—ask the men fresh from service where they learned personal hygiene and sanitation—in the lecture room or the field itself? We try to teach neatness, care, accuracy and sturdiness—is there a better place to find all these than on the mattock line?

"But the loss of time from the classroom?" Take your boys who can afford it if there is to be a loss. As a matter of fact each and every one of the 26 boys on that expedition not only studied in camp each morning, but he passed his monthly and Regents examinations satisfactorily.

This bit of detail to meet the objections that are sure to be raised at the start. And the big point is this—conservation work in practice as well as in theory, should be required by the department of education in every state, from each boy in high school. Eventually it will be. The question is: "Will it come in time to save us?" Not if left to itself. This is something that will require effort, organization and a sympathetic co-operation by the educators of the country.

What state will start the ball rolling?



## ARBOR DAY OBSERVANCE PRAISED

**E**DITORS of the nation have given the most remarkable response to the American Forestry Association's Arbor Day semi-centennial activities in honor of J. Sterling Morton. Whether it be memorial tree planting, Roads of Remembrance, or sending tree seeds to Great Britain and France, they all seize upon the theme for editorial expression of the greater lesson behind it all—an endeavor to interest the public in the broader aspects of the question, the perpetuation of our forests.

Of course, the people responded in magnificent fashion to the tree planting call and the editors saw that response. Take, for example, the plans of the Rock Island Railroad for instituting tree planting along its lines to celebrate the seventieth anniversary of the first train out of Chicago for the West. The educational possibilities of this plan alone cannot be estimated at this writing, but the fact remains that the message of the trees and what they mean is being carried from one end of the country to the other.

To recount the tree planting activities of the nation this spring would take too much space. We must be content with giving the members of the Association a con-

densed review of those mirrors of public opinion, the editorial pages of the country. They best reflect what the country is doing, fast becoming a tree-planting nation. Some of the editorial comment follows:

*Tacoma Ledger:* Fifty years ago the first Arbor Day was celebrated in Nebraska, in response to a recommendation of the State board of agriculture. From that small beginning, it has grown into an institution of vast scope and influence, whose possibilities are even now only beginning to be realized, as Americans see the depletion of their forests and appreciate more fully the need of new planting.

*Albany Press:* The occasion of the semi-centennial of the day should be a good time to make resolutions to the effect that tree planting will be given unsurpassed attention in the next fifty years. New York State has started this year remarkably well.

*Battle Creek Journal:* Trees are for all moods and all ages, bestowing their blessings on any who will deign to accept them. If you want a sure, true friend for life, plant a tree.

*Boston Post:* If every State in the Union could show as wonderful results as have obtained in Nebraska where 700,000 acres have been planted with trees, the natural forest States would have standing timber in abundance and every State in the Union would be able to boast of valuable forest reservations. A treeless United States would eventually mean a sterile United States through the gradual drying up of rivers and other waterways, the arteries of fertility.

*Dayton News:* It is not generally known that to the State of Ohio belongs another distinction—that of being the birthplace of the *American Forestry Association*. The actual organization took place in 1882, just forty years ago. Many men whose names were identified with distinguished service for their country, were a part of the organization work. Of course, anniversaries are important only in proportion to the good results they bring and for the inspiration which they offer. The Forestry Association has been an important feature of life in America. The *American Forestry Association* proposes to keep on educating people in the subject of conservation and forest preservation.



### MIL ANOS DE VIDA PARA ESTE ARBOLITO INTERNACIONAL

National Photo

The first tree ever planted by women representing twenty-one countries was placed, on the afternoon of April 28, in the grounds of the Pan American Union at Washington, District of Columbia, and was dedicated in four languages. The women used the American Forestry Association's famous tree planting trowel first wielded by Mrs. Warren G. Harding, which, the first used it a year ago, has traveled far in tree planting in many parts of the country.

In dedicating the willow oak, this phrase, "Long Life to This International Tree," was spoken in Spanish, Portuguese, and English.

The ceremony was just before the tea given by Mrs. Charles Evans Hughes for the Pan American delegates to the conference. Vice President Coolidge made a short address after being introduced by Director General L. S. Hughes. Mrs. Hughes and Mrs. Maude Wood Park, president of the conference, then took the little trowel in which it has traveled so far and placed earth about the roots of the tree. They were followed by delegates from twenty-one countries of the Pan American Union.





TREE FROM GRANT'S FARM PLANTED ON HIS BIRTHDAY

Underwood &amp; Underwood

The program in New York City marking the centennial of Grant's birth, April 27, 1821, was opened by the American Forestry Association planting an elm near Grant's Tomb on Riverside Drive. The tree was sent by August A. Busch, a member of the Association, who has restored the Grant farm near St. Louis. President Charles Lathrop Pack, Henry W. Hayden, president of the Grant Monument Association (behind tree), Colonel A. L. Boyce, of the American Legion (at left of picture), and General Isadore Isaacs (in uniform), department commander of the G. A. R., threw the earth upon the roots. Later in the day Marshal Joffre, of France, attended exercises at the tomb. President Harding spoke at Grant's birthplace in Ohio, while in Washington on that day the Princess Cantacuzene, grand-daughter of General Grant, and Princess Ida Cantacuzene, a great-grand-daughter, unveiled the Grant Memorial in the Botanic Garden. Wesley B. Leach, city forester of New York, made the advance plans for the tree planting.

*Fremont (Nebraska) Tribune:* The American Forestry Association takes occasion to hook up its particular mission of forest protection with tree planting, which is cultivation of the forest unit. This is the week for planting trees, which Nebraskans have faithfully done for the past half century, as attested by thousands of fine groves scattered over the fertile fields of the State. Planting trees and attention to their growth to see that they develop into usefulness is the best way *The Tribune* readers can help the interests of forestry.

*Nashville Tennessean:* Arbor Day primarily is observed in the schools, and there the children are taught the value of the living tree and its care. The study of this subject is of great importance. It will not be many years before the forests of this country are denuded unless reforestation is undertaken on a gigantic scale.

*Cincinnati Enquirer:* The American Forestry Association is doing good work in many directions. There is something finely sentimental in its drive, now in full swing, for the planting of memorial trees and "Roads of Remembrance."

What nobler memorial could any man, or any cause, have than a stately tree? And this movement now will be encouraged and perpetuated until oaks, redwoods, firs, and others of our splendid trees will be found singly, or in group formation, standing out like rare and vital presences above the dust of our heroic dead, or along the highways throughout the nation, where they will contribute beauty and pleasure for the succeeding generations of the future.

*Iowa City Press-Citizen:* Good work is being done by the American Forestry Association in many directions. There is some-

thing finely sentimental in its drive, now in full swing, for the planting of memorial trees and "Roads of Remembrance." This suggestion has been made many months ago for roads out of Iowa City. What nobler memorial could any man, or any cause, have than a stately tree?

*Milwaukee Journal:* Fifty years ago the first Arbor Day was celebrated in a small way in Nebraska. There was a good deal of sentiment and poetry attached to the celebrations. They were made school affairs, and were looked on as especially interesting to women and children. But the benefit of the trees they planted is not limited to women, children, poets and enthusiasts. For that tree-planting set people thinking about what really will happen when we have cut down all the trees we inherited in a virgin country.



*Calumet News:* We have this year, then, the golden jubilee of an event which has meant much to America, which might have meant more had its spirit been better obeyed and which in the years to come will mean increasingly more if Americans are true to their continental heritage. Morton's happy thought of fifty years ago and Nebraska's quick adoption of it started a course of popular education in forestry that generations of people will turn to the glory of their country.

*Benj. Karr in Cleveland News:* The ideal combination which employs trees, in part, for memorials is the one which makes many Clevelanders proud of their city every spring. That is the use of jonquils, oaks and bronze tablets to honor the soldiers of the great war who went out from this city and died in the service of their country.

Our "Liberty Row" blooms every April in its golden beauty of flowers which typify the unending resurrection of nature, the annual triumph of life over death. And all the while an oak is growing where every little bunch of daffodils blossoms. The oaks may last for a century, or much more, despite the unfavorable conditions inseparable from a city environment.

And at the roots of the trees are the bronze name plates of the soldiers they honor, metal memorials which should endure for many hundreds of years.

Here are the loveliness of flowers, the strength and beauty of trees, the permanence of the almost imperishable bronze. The combination is so fine that the planting of such monuments was an inspiration.

*Providence Tribune:* Arbor Day, which is observed in this State on the second Friday in May, the *American Forestry Association* reminds the public, will have its fiftieth anniversary this month. There was no such imperative need of forest conservation when the observance of the day was begun that there is today.

*Flint (Michigan) Journal:* The public has been reminded by the *American Forestry Association* that this month marks the fiftieth anniversary of Arbor Day in the

much in Flint as in any other community in the State or nation because of its large number of magnificent trees and the abundance of foliage, that, in the summer season, makes cooling shade and an attractive city. Fortunately the people are beginning to realize that the conservation of our tree growth is a vital necessity.

*Jackson Patriot:* Our national Arbor Day this year, April 22, is of more consequence than usual, because it is a golden jubilee.



ROADS OF REMEMBRANCE ACROSS NEW YORK STATE

One of the features of the three-day meeting of foresters and lumbermen at the New York State College of Forestry at Syracuse University, on April 20, 21 and 22, was the unveiling of a bronze tablet and planting of the first tree on a Road of Remembrance extending from New York to Buffalo, in memory of those of New York State who lost their lives in the World War.

Fifty years ago this month the first Arbor Day was celebrated in Nebraska, in response to a recommendation of the State board of agriculture. From that small beginning it has grown into an institution of vast scope and influence, whose possibilities are even now only beginning to be realized, as Americans see the depletion of their forests and appreciate more fully the need of new planting.

*Tuscola (Illinois) Journal:* Start the boys and girls with admiration for trees and birds and when they grow up they will not ruthlessly destroy either.

*New York Herald:* A rounded life of public usefulness was Morton's. On his ninetieth anniversary of his birth the *American Forestry Association* planted a tree in Washington dedicated to his memory. That it may thrive along with the movement it typifies will be the general wish.

*Omaha News:* If you have children, teach them that preservation of forests is the only way to insure an ample supply of lumber for the future without paying sky-high prices. Plant a tree for ornament if not for practical use. Do it for the moral effect. The chief value of forest protection week is to get us as a nation to realize the value of trees. In time, perhaps, we may be persuaded to raise a yearly crop of trees just as we raise wheat, corn and cotton.

*Detroit News:* If 50 years ago the truth could have been brought home to the people of the United States that their then vast and magnificent timber supply was not inexhaustible and that it should be conserved and renewed and used only in accordance with the rules of forestry, even then well-known in Europe, we should not be in the pitiable plight in which we find ourselves today.

The *American Forestry Association* is pleading that the coming Arbor Day shall be a celebration of the 50 years of Arbor Days. There is little to celebrate in this connection, but if anything can be done to make the American people serious on the subject of protecting their forests and renewing them in some effective, scientific

way, perhaps Arbor Day is the proper time to begin.

*Chattanooga News:* Promoting reforestation—the purpose of Arbor Day—is no longer an academic issue. It is one of the urgent needs of the time. So far as warning the people of the near approach of the final destruction of our remaining forests is concerned, it might about as well be discontinued. Everybody understands that—it is agreed upon. What is to be done about it? The remedy is simple, notwithstanding our slowness in finding it. Qui wasting timber and plant more trees. Formal celebration of Arbor Day may be well but practical observance is better. Plant trees, and more trees, until the people get grounded in the habit.

*Battle Creek Journal:* Trees are for all moods and all ages, bestowing their blessings on any who will deign to accept them. If you want a sure, true friend for life plant a tree.





National Photo

The American Forestry Association marked the golden anniversary of the first Arbor Day by planting memorial trees for J. Sterling Morton, who started Arbor Day in Nebraska in 1872. The planting was on April 22, the ninetieth anniversary of Morton's birth and the trees were placed in front of the Association's headquarters. Clifford Lanham, of the trees and parking department of the District of Columbia, supervised the placing of the trees. In the picture are: With shovel on the left, Mrs. John N. Baldwin, of Omaha; with shovel on the right, Mrs. W. E. Barkley, former dean of women at the State University. Others in the picture are: Miss C. L. Dodge, Omaha; Mr. and Mrs. Edgar Scott; Mrs. Annis Chaikin Sorenson, Lincoln; John B. Shanahan, Omaha; Mr. and Mrs. Robert Evans, Dakota City; E. C. Snyder, Omaha, marshal for the District of Columbia; Fred K. Nielson, Omaha, solicitor for the State Department; The Honorable John McClellan, Grand Island; The Honorable W. E. Andrews, Hastings. After the tree planting the Association sent telegrams to Governor S. R. McKelvie, Joy Morton, a son of Mr. Morton, in Chicago and to Nebraska City, the home of the elder Morton.



National Photo

A centennial oak was planted by the American Forestry Association on Easter Sunday for Clara Barton, founder of the American Red Cross. The tree was placed in front of the house at Glen Echo, Maryland, where the famous war nurse died on Easter Sunday in 1912. Lieutenant General Nelson A. Miles acted as chairman of the program arranged by Helen Fitz Randolph. Dr. J. B. Hubbell, for thirty years a field agent of the Red Cross under Clara Barton; Mrs. John A. Logan and Mrs. Daniel Lothrop, organizer of the Children of the American Revolution, helped plant the tree and gave short talks on Miss Barton's life. Colonel Charles Sumner Young, of Boston, who has written a life of Miss Barton, was the orator of the day. Miss Carrie Harrison and Mrs. Ross H. Johnson, a French war bride and now a member of the Red Cross, planted the Clara Barton rose. Miss Barton was born on Christmas Day, 1821, in Massachusetts.



# NATIONAL HONOR ROLL, MEMORIAL TREES

Trees have been planted for the following and registered with the American Forestry Association, which desires to register each Memorial Tree planted in the United States. A certificate of registration will be sent to each person, corporation, club or community reporting the planting of a Memorial Tree to the Association.

## TUSCALOOSA, ALA.

By Farley W. Moody Post, American Legion: Charles H. Burns, Lt. C. Arthur Lewis, Major Tube C. Cope, Oemer L. Amery, Abner T. Jones, Grant Espey, Ellie Cameron, Maxey J. Meadow, William High, Marvin Gay.

## GURDON, ARK.

By Federated Club and Chamber of Commerce: James Lloyd King.

## WASHINGTON, D. C.

By Mr. and Mrs. George Combs: Mrs. Elizabeth H. K. Du Hamel.

## STUART, FLA.

By Woman's Club: Harold R. Johns, W. J. Wilson, Warren White.

## ABBEVILLE, GA.

By Abbeville Women's Club: Charles C. Russon, Madison L. Gooze, Lorrie M. Carnes, Madie R. Ware, Theodore Farmer.

## AMERICUS, GA.

By Christian Endeavor Society: C. G. Clements, J. D. Bridges, Wyatt Chapman, Wade Lott, Gordon Statam, Nottingham Law, John D. Mathis.

## DEMOREST, GA.

By Mrs. E. H. Burrage: Einar M. Anderson.

## LAWRENCEVILLE, GA.

By Woman's Club: Corp. Clyde Y. Nix, Corp. James P. Samples, Charley E. Hawthorne, Ivery Woodward, Leonard Roberts, Homer D. Brooks, Shirley W. Stanley, Alonzo Fowler, John C. Reeves, Arthur W. Wylie, Lt. George Harold Byrd, Lewis Webb, Lee F. Youngblood, Charlie Clack, William L. Hannah, James R. King, Clarence R. Morgan, Lt. Paul Settles.

## TENNVILLE, GA.

By Woman's Club: Lt. W. S. Sewell, Capt. John C. Harmon, Mrs. A. E. Gilmore, Prof. G. G. Maughon.

## CRETE, ILL.

By Woman's Club: Martin Biesterfeldt.

## EUREKA, ILL.

By Walnut Grove Lodge, 344, Knights of Pythias: Soldier Boys who lost their lives overseas.

## KINGS, ILL.

By Miss Ethel Gibson and Mr. John Lardson: Soldiers and Sailors.

## LEAF RIVER TOWNSHIP, ILL.

By Mrs. John Croft: Soldiers and Sailors.

## MONROE CENTER, ILL.

By Mrs. Georgia H. Davis: Soldiers and Sailors.

**MOUNT MORRIS TOWNSHIP, ILL.**  
By Mrs. H. W. Cushing: Soldiers and Sailors.

## NAPERVILLE, ILL.

By Woman's Club: Eugene Berger, Clyde Beidelman, Edward C. Babst, Arnold Hiltensbrand, Edward W. Hiltz, Oliver J. Kendall, Harry E. Rude.

## OREGON, ILL.

By Mrs. Rebecca Kauffman: Soldiers and Sailors.

## PRINCETON, ILL.

By Princeton City Schools: Those who lost their lives.

## SPRINGFIELD, ILL.

By La Fore Lock Post, No. 755, Veterans of Foreign Wars: La Fore Lock Unknown Dead.

## SHELBYVILLE, IND.

By the Council of Clubs: Russell Worland, Lawrence Rehme, Ralph Wertz, Irwin Hat-

field, George Gaines, Raymond Farley, Carson King, Raymond Humphries, Ernest Fisher, Joseph Farrow, Howard Cherry, Martin Kendall, Paul Cross, James Q. Brown, Otis Wertz, Conwell Carson, George Birely.

## SIoux CITY, IOWA.

By Children's Park Association: Lieut. Clair A. Kinney.

## SALINE, MICH.

By Saline Women's Club: Soldier Boys of Saline.

## AUBURN, N. Y.

By Mrs. M. S. Irish: Rev. Guy P. Burseson.

## ELMHURST, N. Y.

By Newtown High School: Edward J. Carr, Russell Chapman, Clarence O. Collins, Michael A. Colliton, Thomas J. Erb, Stephen M. Finnigan, William Hanrahan, Goldsmith H. Hardgrove, John J. Haspel, Charles C. B. Hogan, James C. Irwin, John Kerrigan, Harold B. Klingeman, Edward J. Lange, Francis M. Laughran, Albert J. Martin, William F. Moore, George N. Oldhausen, Arthur F. Purnhagen, Francis F. Putz, William F. Schmidt, James E. Smith, Louis Serlin, Edgar Sullivan, Julius Weiss.

## NEW YORK CITY.

By Company B, 307th Infantry: Capt. Blanton Barrett, Lieut. Clarence I. Grubbs, Lieut. W. Alan Mathews, Lieut. William R. Reid, D. S. C., Sgt. Frank W. Burke, Sgt. George F. Russell, Sgt. Benjamin Silverman, Cook George Alberts, Corp. Hugh A. Brady, Corp. Robert Flanagan, Corp. Hugo R. Garbaden, Corp. George L. Hickey, Corp. John E. Kelly, Corp. Martin J. McHugh, Corp. John P. Rhynard, Corp. Albert J. Robars, Corp. James F. Walsh, Bugler Edward J. Noonan, Claire F. Andrews, Cass Atterbury, Barney Bardman, D. S. C.; Christian A. Baty, Raffele Bibb, John Blackburn, Jacob Borker, Louis Breth, William F. Brophy, Claude C. Brower, Michael Carlo, Walter L. Cassidy, Frank Charles, James Conner, James L. Cronin, Richard W. Cullen, John P. Dolan, Joseph V. Domkus, Hyman Fishfanger, James Folliart, Jr., Irving H. Friedman, George E. Garrett, John Grove, Joseph P. Hanley, Salie Hausner, George R. Hawley, Holliday, Charles L. Kaurin, Joseph E. Kayes, Peter T. Knab, Michael P. McCormick, Andrew A. McKinley, Earl Millsap, D. S. C.; Royal E. Morris, Charles Munzinger, Alfred W. Nicherson, William Otto, Albert C. Peterson, D. S. C.; Ernest W. Peterson, William Plaudman, Albert Pritchard, James Robinson, W. Rozichuck, Elmer O. Sellers, Charles P. Schildknecht, Schneider, Frank Sheets Stengel, Joseph Strauss, August F. Unnewehr, Maurice Wachtel, G. H. Woods, Paul Zukasky. By Knights of Pythias: Emanuel Brode, Morris Dickstein, Alexander Goldberg, Jerome Heine, Louis I. Hirshfield, Simon D. Katz, David M. Klein, David Reisman, Sydney U. Schwartz, Jesse Steinhil. By Stuyvesant High School: Students and Teachers.

## BOONE, N. C.

By Friends and Relatives: Grady Barnes, George Brown, Jerome Coffey, Willie Edminsten, Milton Greene, Thomas Mast, Timothy D. Norris, John Simmons, Russell Teague, Smith D. Trivett, Ben A. Trivett, Albert Walser, Geoffrey Winkler, Grover C. Woodring, Linnie Coffey.

## CINCINNATI, OHIO

By Avondale School: John Howard Ayers, Carl Samuel Bing, Clifford W. C. Brill, Caspar Henry Burton, Bernard Hirschler, Robert Livingston, Robert Douglas Meacham, Clifford Nelson, Samuel Pogue, Langdon Laws Ricketts, Robert Schroder, Earl Steinman, Eugene Frederick Rowe.

## DAYTON, OHIO

By Council of Jewish Women: Arthur E. Pereles, Ervin M. Welt.

## COYLE, OKLA.

By Mothers' and Daughters' Club: James Norris, Herold Elwin Pierce, Sgt. Warren Thomas Bentley.

## BOALSBURG, PA.

By Mrs. James R. Irwin: Alvin Andrew Bohn.

## DALTON, PA.

By Mrs. James P. Dickson: Corp. Howard Tracy Foster, Harold D. Hall, Ralph Emerson Kellogg, A. B., Wilbur F. Gardner, Percy Hulbert Brown.

## HARRISBURG, PA.

By State Capitol Lodge, No. 70, I. O. O. F.: Allen S. Hartman.

## MERCERSBURG, PA.

By Woman's Club: Harry E. Lachove, Alvin E. Sheetz, Charles Russell Jones, James C. Rockwell, Leslie S. Zeger, Walter Seville. Lt. G. Frank Poffenberger, Lewis Himes.

## CHATTANOOGA, TENN.

By Gen. A. P. Sterart Chapter, U. D. C.: Mrs. C. A. Lyerly, Mrs. Frances Fort Brown. By Women's Service League: Dwight Preston Montague, H. Clay Evans.

## LUCY, TENN.

By Lucy High School: Leslie Jamison, Theon Parks, Marvin House.

## GALVESTON, TEXAS

By First Presbyterian Church: Clifford Burke, Wm. J. Sebree.

## MOUNDSVILLE, W. VA.

By Woman's Club: Albert A. Mountain, Walter B. Riggle, James R. Fitzgerald, Forrest Lee Delaney, Ralph L. Alexander, Mike V. Saner, Patrick J. Rogers, Jesse Grim, Howard M. Fisher, Walter R. Hartley, Elbert Whorton, James L. Robinson, Lawrence Lancaster, Michael Romano, John W. Gray, James R. Wilkerson, Mike Datzko, George Grayson, George Varlas, Austin E. Gray, William Thomas Blake, Oliver Earl Francis, Lester Delmo Durbin, John T. Oliver, William Nice, David W. Geho, John Hughie Earliwine, Pete Barovic, John R. Orum, Denver P. Martin, William Offertinger, Paul Lajek, Ralph E. Lowe, Pearl R. Yates, John D. Hanna, Thomas F. Logsdon, Salter Chambers, William E. Eller, Guy Peoples, William Alfred Riggle, Robert William Robinson, Ellsworth R. Richmond, Frank Turvy, Walter C. Courtwright, Paul A. Norrington, Roy Samuel Hubbs, Edward Leo Blake, Jesse Bond Hewitt, John M. Williams, John Dobias, Clarence Van Dime, Earl Staley, Samuel Tucker, Joseph S. Wilbin, Alvin W. Logsdon, Lester Crow, Lester Scott, Matthew Green, Lee Gittings.

## MILWAUKEE, WIS.

By Students and Faculty of Milwaukee State Normal School: Those who lost their lives.



# Editorials on the Gifts of Seeds to Europe

*Philadelphia Record*: England suffered more forest depletion than did France, though no enemy army marched across the island. England supplied timber needed for the campaigns by chopping down trees wherever found, whether upon private estates or in the royal Windsor Forest.

Now comes Charles Lathrop Pack, president of the *American Forestry Association*, upon the anniversary of America's entry into the war, and he presents to France and England 100,000,000 Douglas fir seeds—enough to reforest 100,000 acres. It is the first time in all history that a nation or its citizens, desiring to express international sympathy, has been inspired to "say it with forests." These seeds will be propagated, scientifically, in nurseries, transplanted, and, for centuries to come, France and England will be verdant with American generosity.

*South Bend News Tribune*: One of the very important works that is now being done is that of growing forests in the devastated districts of France. Under the direction of Charles Lathrop Pack seeds are being furnished to France from which will be grown the trees that, fifty years hence, will flourish in spots ravaged by the armies. Unless we stop destroying our forests, our country in another generation may be as lacking in forests as France.

*Plattsburgh Press*: M. Jusserand, the French Ambassador, preached a powerful forest protection week sermon the other day when he accepted the gift of millions of tree seeds for France from Charles Lathrop Pack, president of the *American Forestry Association*. He said: "Once more America is coming to the rescue. We did not believe that our gratitude could be increased but it will be by what you are doing. Of few things were we prouder than our forests, but they suffered terribly from the war." France knew how to use her forests and keep them producing at the same time. Then the war came along. Why is it the United States, the *American Forestry Association* asks and rightly, does not have a forest policy? We should have a forest policy that results in a crop of trees every year, just as we have crops in everything else. Will it take a war, wiping out what we have left, to bring action?

*Asheville (North Carolina) Citizen*: Charles Lathrop Pack, president of the *American Forestry Association*, has recently presented to the French Government a gift that will not only aid France in the reclaiming of war devastated areas, but will make stronger the ties of friendship between France and the United States. Mr.

Pack is sending to France 700 pounds of fir seed, or enough to reforest 30,000 acres of timber land.

*New York American*: Goodwill between individuals is the dividend on acts of kindness, thoughtfulness, courtesy, helpfulness. It is equally true as a promoter of cordial relations between nations. It is simply the fine spirit of brotherhood writ large, not as a vague theory, but as an inspiring, pervading force.

Treaties, at their best, merely bind governments; they do not bring the peoples of these nations into closer relations of common understanding, sympathy and helpfulness. The finer spirit of kindness has no fear of "entangling alliances."

Charles Lathrop Pack, president of the *American Forestry Association*, is sending to France seven hundred pounds of fir seed, sufficient to plant 30,000 acres of forest land on French battlefields.

Acts of fine human helpfulness such as these do more to promote real, lasting goodwill between the people of the earth than all the acts of diplomats and governments.

*Newspaper Enterprise Association*: Millions of tree seeds have been given to France by Charles Lathrop Pack, president of the *American Forestry Association*. England and France both realize the value of trees. Unless we stop destroying our forests, our country in another generation may be as lacking in forests as France. With a little common sense, Americans would raise a yearly crop of trees just as they raise wheat, corn and cotton.

*Washington Post*: It was fitting, on the anniversary of the entrance of the United States into the war, that the practical thoughtfulness of the *American Forestry Association* should crystallize into a generous gift of tree seeds that are to be used in the restoration of the former great forests of France, made desolate by the enemy, and in the upbuilding of those wonderful woodland preserves in England, denuded in time of stress to provide war materials. The seed that is to cross the ocean and bear fruit in the fertile soil of the allied countries represent the hardy growth of this country, gathered in climes comparable with those where they are to thrive and flourish. They will become growing, living memorials to the men who went from here to fight in the common cause. Seeds are little things, but from them grow the great forests, and doubtless they will become the messengers of that goodwill which just now seems to be sorely needed throughout the disturbed world.

*San Antonio Express*: France has a long-established forest policy. It is replanting the woods so wantonly destroyed, and seeks to do this quickly and thoroughly. In England and Scotland the great forests were sadly depleted during the war. The British Forestry Commission is hard at it, to restore them to pre-war conditions. These countries are giving an example to the United States.

*Columbus Journal*: The presentation by Charles Lathrop Pack, president of the *American Forestry Association*, to Ambassador Jusserand of a large consignment of fir seeds for the replanting of the forests in France had little of the spectacular in it, but it was one of the most significant gifts that America has made to France since the war.

As evidence of how the French valued their forests and appreciated the gift of the seed, Ambassador Jusserand, in accepting the gift on behalf of his government, declared: "We did not believe that our gratitude could be increased, but it will be by what you are doing."

The gratitude of the French is not assumed for the occasion, for the gift has more than a sentimental value. It will permit not only the restoration of beloved forests, but will prevent a future timber famine in France, and will be of immense economic advantage. The possession of timber supplies was an important factor in saving France during the war. The ambassador even went so far as to declare that the French forest policy won the war.

In her appreciation of her forests and timber resources, France is setting an example that the United States may well pattern after. We have been so profligate with our timber that the time is not far distant when some one will have to give us seeds for trees, if steps are not taken soon for renewing American forests.

The cordial reception by France of this American gift, emphasizing, as it does, the necessity for conservation of resources, should stimulate new interest in this country in this movement.

*Louisville Herald*: England has for centuries cherished and conserved her forests. When war came hundreds of thousands of acres of fine trees were sacrificed. With France the situation was the same, denudation there, however, being vastly increased by the German destructiveness. The loss has not gone unnoticed by Americans and Douglas fir seeds were formally presented to France and Great Britain by the *American Forestry Association*. The importance of these forests to France was a lesson not lost to Americans, and a more intelligent interest in forestry conservation for ourselves is noticeable now.



# CANADIAN DEPARTMENT

By ELLWOOD WILSON

The report of the Department of Lands and Forests for 1921 is received and contains some very valuable suggestions for the better management of Quebec's forests. The law that was passed at the last session of the Legislature, to the effect that anyone operating on Crown Lands, so-called "limits," must, if he wishes to cut in any other way than to the present diameter limits, thirteen inches two feet above the ground, for white and red pine, ten inches for white spruce, seven inches for black spruce, present a working plan for the approval of the Chief Forester is a long step forward in forestry practice. When this is approved permission to cut to different diameter limits or even to cut clean may be granted. This law is not only a good one for the public domain, but also for the licensee. It prevents over cutting and thus lengthens the life of the timber supplies, insuring the permanence of industries dependent on the forest, which stabilizes and strengthens such industries, putting them on a permanent foundation. The government's idea is to ascertain the amount of wood produced annually and then to restrict the cut to that amount. This will, of course, necessitate the mapping and estimating of the timber by licensees and the preparation of working plans in advance of logging, but the more progressive companies have already either nearly completed such work or have it under way. Almost all of the uncut stands in Quebec are over mature and the areas show an annual decrease in the amount of timber rather than an increase and these areas will never become productive until they are cut. In many instances the advanced growth is sufficient to restock the areas if they are cut clean. There are also many areas in the north where only about ten per cent of the timber ever reaches the government diameter limit and these, if the diameter regulation is enforced would be practically closed to lumbering. By cooperation with the government, practical plans for lumbering can be worked out which will not only put limits on a sustained yield basis but will make logging cheaper and more profitable. Mutual confidence on the part of the government and the licensee will help both parties and will be to their advantage.

Simcoe County in Ontario has purchased 1000 acres of land and has planted part of it with white pine seedlings and plans to restock the whole area, thus creating a county forest. The land was at one time covered with white pine. It is the aim of Ontario to encourage such work and the Premier hopes to have a forest for every county.

Grand' Mere, Quebec, is trying to establish a municipal forest and it is hoped that this plan will mature during the coming year.

A prize of \$5,000 has been offered by Mr. F. J. D. Barnjum for the best means of combating the spruce bud worm and other forest insect pests. This is the culmination of his other offers of prizes for the best essay on fire protection, the best work done by individual fire rangers, and the establishment of the first municipal forest. Mr. Barnjum is devoting his time, money and energy to the cause of perpetuating his country's forests and deserves all possible credit. If other men of means would follow his good example, progress would be much more rapid.

The Canadian Air Board will place five airplanes at the disposal of the Dominion Forestry Branch for fire patrol in the forests of Northern Manitoba. The station will be at Victoria Beach, Lake Winnipeg, and the patrol will extend as far west as The Pas, near the Saskatchewan Boundary. This will demonstrate the value of aircraft for such work.

Observations on the Canadian prairies show that the trees are gradually advancing westward, due to fewer prairie fires. The trees push forward in islands but are hindered by the prevailing winds, but in spite of these progress is steady.

The two cars of the Canadian Forestry Association are doing splendid work, one in British Columbia, for fire protection and forestry, the other in the Prairie Provinces, for tree planting. The cars have done excellent educational work and their equipment is being steadily improved.

A fire was discovered in a pine plantation belonging to the Delaware and Hudson Railroad about three miles south of Plattsburg and was reported to the commandant at the United States Army Barracks at Plattsburg, who promptly sent out a truckload of soldiers. They extinguished the fire before a very great deal of damage was done. This public-spirited action deserves great commendation and is in keeping with army traditions.

Mr. D. C. A. Galarneau, who inaugurated the forestry department of the St. Maurice Paper Company, has resigned his position to become Assistant State Forester of Massachusetts, with headquarters at Springfield.

The Dominion Forestry Branch has begun the season's work at its various forest experiment stations and with the appropriation made for this work should accomplish a great deal during the coming summer. Nothing is needed more at present than accurate information about the growth

of trees in the forest and in planted stands, their diseases and insect enemies and there is only one way to get such information and that is by the establishment and continuous study of sample plots covering all the various conditions. So little work has been done along these lines that each one must experiment for himself. Many questions affecting artificial regeneration are waiting solution, and many people are waiting for authoritative information before undertaking reforestation.

A company is in the process of formation which will undertake all kinds of aerial surveys. Photographs will be taken for mapping and estimating timber, for preliminary surveys for railroad, highway and waterpower development, for town planning, for rights-of-way for power lines, and for checking the progress of river drives and logging operations. This company will be known as the Fairchild Aerial Engineering Company (Canada). It will work in conjunction with the Laurentide Air Service, Ltd., which will do all the flying. The head office of the Company will be at Grand' Mere, Quebec.

The President, Mr. G. Fujihara, the Purchasing Agent, Employment Supervisor and some other members of the Oji Paper Company, of Tokio, Japan, visited Canada during the month of March. This company is one of the largest in the world, with a capital of \$25,000,000, and operating 32 paper machines. The timber lands of the company are on the islands of Hokkaido and Saghalien. Conditions both in the woods and in the mills are very similar to those in Canada and they have about the same species. This company has a forestry department, in charge of Mr. Kobayashi, who has also visited Canada, and is much interested in its work. The President is a director of the Japanese Forestry Association.

A very interesting pamphlet has just been published by Mr. Henrick Carbonnier, who, on behalf of the Swedish government made a trip through the United States and Canada in 1920. It is a book of 150 pages and is excellently illustrated with photographs and maps. It also contains many diagrams and tables and gives descriptions of the forest types and conditions in different parts of the country. Logging methods, mensuration, industrial uses of woods, industries, exports and imports, forest policies and so forth are well covered. Mr. Carbonnier was a close observer and his book is interesting as showing what a Swedish forester thinks of us and our methods.



**FIVE ELMS MEMORIAL FOR GREEN**

On the site of the old McGowan Pass Tavern, Central Park, near the East Drive, about opposite 106th Street, five of the largest trees ever planted in New York City now stand, as part of a memorial to Andrew H. Green, who, during his long public career took an active part in the building and maintenance of the park.

Samuel Parsons, for thirty years landscape architect of the Park Department and a friend of Mr. Green, suggested to the Andrew H. Green Memorial Association that one of the most fitting memorials would be a group of big elms in the park, says the New York Times. Col. Henry W. Sackett, the president of the association, and Dr. Edward Hagaman Hall, the secretary, called a meeting of the association and the suggestion was adopted.

Mr. Parsons selected the trees at Elmsford, in Westchester county. Each is about 50 to 60 years old, and about 15 to 18 inches thick and weighs ten tons, so that much care had to be taken in moving them. Mr. Parsons and other tree experts supervised the work. The present Park Commissioner, Francis D. Gallatin, took an active interest in the plan for the memorial and gave the committee every assistance.

In 1868 Mr. Green originated the plan for the combination of the boroughs into Greater New York, a proposal not carried out until about thirty years later. He also advised the plan for the consolidation of the Astor, Lenox and Tilden Foundations as the New York Public Library, and assisted in the establishment of the American Museum of Natural History and the Metropolitan Museum of Art. He founded the New York Zoological Society and was its president.

**FIRES IN PENNSYLVANIA**

Major R. Y. Stuart, Commissioner of Forestry, has issued the following statement concerning the forest fire situation: A considerable number of forest fires are now being reported to the Department of Forestry. The Department's organization and co-operating agencies are actively at work doing all they can to prevent fires and to extinguish promptly those that occur. Material in the forest is now so dry that any fire started may assume serious proportions in spite of the most efficient methods used in reaching and attacking it. Every citizen of the state is earnestly requested to avoid the use of fire in the woods so far as practicable. If fire is necessary, the utmost care should be exercised in its use. Forest fires in Pennsylvania are practically all of human origin, and consequently are preventable. The loss they occasion is a needless waste to the citizen and the State. I hope every Pennsylvanian will recognize the duty of good citizenship by cooperating in every way that he can to put an end to them.

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## REFORESTATION IN WASHINGTON

Greater interest than ever before in the preservation of the forests of the State of Washington is being taken by lumbermen, legislators, and the general public. This is due largely to the depletion elsewhere in the United States of the timber supply and the ever-increasing cut on the Pacific Coast. At the present rate of cutting of over 5½ billion feet of timber annually, and with little regard for reforestation, the time is not far distant when the supply of timber will be exhausted. If the State early adopts measures to secure reforestation of the cut-over lands suitable chiefly for the production of timber, it is estimated that the present cut may be continued indefinitely through growth of young timber, thus maintaining the chief industry of the State.

Since the meeting of the Forestry Conference held in October, 1921, under the auspices of the State Development Bureau in the Seattle Chamber of Commerce for the purpose of laying the foundation for a thorough and definite State Forestry Policy, Advisory Committees have met on a number of occasions.

A general conference will be held in the fall at which the reports and recommendations will be submitted, looking towards a well-defined State Forestry policy. It is

expected that the recommendations will then be submitted to the January, 1923, session of the State legislature.

After an address given in April by Geo. S. Long before the Tacoma Chamber of Commerce and Commercial Club, a committee was appointed to further the idea of a State Forestry policy. A tax investigation committee has been appointed by Governor Hart, with duties covering a broad field of investigation. In addition to other matters, this committee is now considering legislative measures looking towards reforestation on both state and private cut-over lands.

## TIMBER PRESERVATION

The increased demand for permanent timber structures is shown in a recent report of the Service Bureau of the American Wood Preservers' Association. Over 2,400,000,000 board feet of timber for various purposes were pressure treated in 1921 by the 122 wood preserving plants in operation throughout the United States, thereby surpassing the 1920 record by nearly 17 per cent. Approximately equal amounts were treated with coal-tar creosote and with zinc chloride, the standard wood preservatives.

To treat this wood 51,375,360 pounds of zinc chloride, with an absorption of one-half pound per cubic foot, and 79,384,326 gallons of creosote, with an absorption of 5 to over 20 pounds per cubic foot, were required. Ease of handling and the permanence of well-treated wood at low cost are given as the reason for the increased demand. The proper use of a wood preservative adds a new quality to timber which enhances its value as a construction material. The material treated consisted mainly of construction timbers for wharf, bridge, highway, mining and building purposes, piling, telephone and power poles, ties, fence posts, wood blocks for street paving and for factory floors, and timber for miscellaneous uses.

## PENNSYLVANIA FIRE WARDENS

A very interesting meeting of the Fire Wardens was held under the auspices of the Pocono Forestry Association at Stroudsburg, Pennsylvania. Forty-two of the forty-five fire wardens of Monroe County were there, at this ninth meeting of their organization. There were excellent addresses by Mr. Charles W. Meek, Dr. W. R. Fisher, Mr. E. A. Hoops, Mr. J. H. Kunkle, Secretary of the Pocono Association, County Superintendent of Schools Frank Koehler, District Forester Stadden and others. Much interesting information regarding the development and progress of fire protection work in the state was presented and enthusiastic appreciation of the work of the wardens was expressed.

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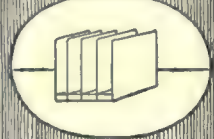
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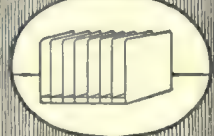
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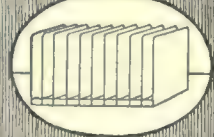
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### EASTERN NATIONAL FORESTS

The purchase of more than 2,000,000 acres of forest lands by the United States has been approved and 1,700,000 acres has been acquired and put under administration as National Forests, in the Eastern States, in accordance with the provisions of the Weeks law, enacted March 1, 1911. The results of a decade of work under that law have been summarized by the National Forest Reservation Commission in its report for 1921, which has been submitted to Congress by Secretary of War Weeks, president of the commission.

The National Forests created from the purchased lands lie in the States of Maine, New Hampshire, Pennsylvania, Alabama, Arkansas, Georgia, North Carolina, South Carolina, Tennessee and Virginia. They have been established primarily to protect the headwaters of 12 important river systems. This protection benefits not only navigation but also waterpower development, and provides a basis for a system of flood control, either natural or augmented by reservoirs.

The purchase of lands in Pennsylvania, the report states, was begun last year on the headwaters of the Allegheny River. The recurring floods on the Ohio, especially at Pittsburgh, made this desirable. Other rivers protected are the Connecticut, Androscoggin, Saco and Merrimac, all important New England streams on which many manufacturers are dependent for power, and the Monongahela, which with the Allegheny has been the chief source of the floods so disastrous to Pittsburgh.

The new forest to be built up in northern Pennsylvania, under the name of the Allegheny National Forest, is to embrace more than 400,000 acres of rough, cut-over land, much of which is badly burned and at present producing nothing of value, and which is in need of fire protection and forestry management to make the area again a productive asset to the State. All the forests in the 10 States have an important function in connection with timber production.

### A VOTE FOR THE SYCAMORE

At the recent annual meeting, held early in April, of the National Association, Survivors of the Battle of Shiloh, the following resolution, declaring for the sycamore as the National Tree, was passed:

"Be it resolved by this Association, now on its annual pilgrimage to the field of this mighty conflict, that the Sycamore Tree be commended as the National Tree of the United States of America, and we hereby endorse the same and cast our votes for it, its pure white body and limbs being the emblem of peace, now so much desired by the entire world.—George P. Washburn, Commander."

### SMOKERS CAUSE MANY FOREST FIRES

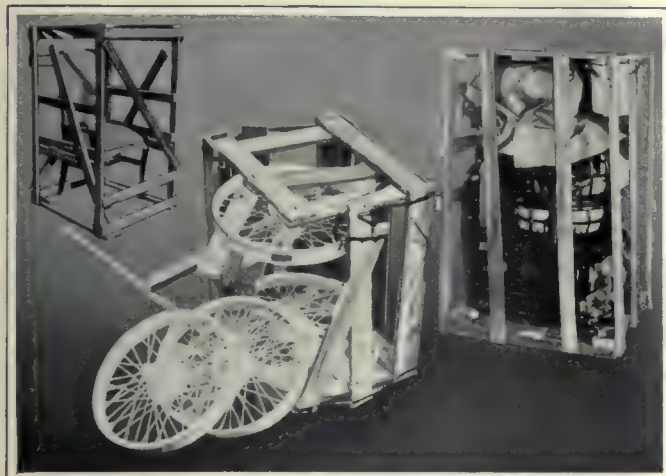
Twenty per cent of all the forest fires started by man in the National Forests of the West during 1921, were caused by careless tobacco smokers, according to figures compiled by the Forest Service, United States Department of Agriculture. In California, Arizona and New Mexico one out of every four forest fires due to human agencies was started by burning cigarettes, cigars, matches or pipe-heels carelessly thrown aside by smokers while in the woods. In other parts of the West the percentage of smokers' fires ranged from 12 to 18 per cent. The total number of forest fires on the western National Forests during the past season was 5,131, of which number 1,444 were caused by lightning, 732 by smokers, and 2,955 by other human agencies.

Careless smokers, foresters point out, are responsible for one of the most serious fire hazards in the country, because they fail to take proper precautions with burning tobacco and matches. The preventable fire waste of all kinds from these causes averages more than \$18,000,000 a year, according to figures published by the National Board of Fire Underwriters. The "tailor-made" cigarette is the principal offender in the woods, where a glowing "snipe" thoughtlessly thrown down on the forest floor may cost the public thousands of dollars for fire fighting, to say nothing of the value of timber destroyed, the desolation of scenic beauty spots, and the harm done to waterflow and wild life.

### FOREST LAND PLANTED

More than 3,000 acres of idle land in Pennsylvania, which are suitable only for growing a crop of timber, were planted this spring with young forest trees, grown and distributed free by the Department of Forestry. Thousands of trees were shipped every day from the three forest nurseries at Mont Alto, Clearfield and Greenwood Furnace. The Department of Forestry estimates that more than 3,500,000 trees, evergreens and hardwoods, were given without cost to owners of land in this State. About 165,000 other trees were planted in State forests. Applications for the State's trees this spring far exceeded any previous demand, and the entire available supply was taken long before the planting season opened. John W. Keller, chief of the Bureau of Silviculture, said he had applications for at least 7,000,000 seedlings, but only half that number could be supplied. Next year, the department's nurseries will grow about 8,000,000 trees for the reforestation of Pennsylvania's waste and denuded lands.





"WHEN traffic again reaches a normal quantity much freight is going to pieces in transit by reason of insufficient packing unless a very material improvement in packing is effected."

The above paragraph from the report of a division freight agent of one of the leading railroads of the country will suggest to many business men the importance of checking up on their present methods of packing their goods for shipment.

\* \* \*

At the left are shown a few specimens of faulty crates—by no means exceptional instances. You will find scores of such crates at any freight terminal, any time. They help pile up the claims for damaged freight which every year mount into millions of dollars.

\* \* \*

The services of a Weyerhaeuser crating engineer are available to any shipper who thinks that his packing methods might be improved.

## Does the Proper Packing of Goods Pay?

ASK any jobber or retail merchant what he thinks about the value of proper packing.

The chances are he will name those shippers whose products always arrive in good condition—ready for immediate use or sale. No needless repair costs; no damage claims and allowances to haggle over; no lost parts to replace.

He will probably tell you that this is one reason why he likes to do business with them.

SHIPPERS in all lines are finding that proper packing makes selling easier. The elimination of damage claims and allowances speeds collections and increases profits. Very frequently, too, they have found it possible, through scientific crate design, to reduce, materially, their packing costs.

One manufacturer has saved 28% in lumber on one crate, 30% on another, and more than 50% on a third. His total savings in lumber and shipping weight amount to over ten thousand dollars a year. And in each instance the redesigned crate has proved more efficient than the one formerly used.

Proper crate construction is no longer a matter of guesswork. The engineering principles upon which it is based are now established by the experience, observation and experiments of the U. S. Forest Products Laboratory, the railroads

and many large shippers as well.

In the same manner that merchandise is being designed, tested, redesigned and tried out, so, too, are the crates which are to carry these goods being designed and built to meet successfully the hazards of transportation at a minimum cost.

The Weyerhaeuser organization has for years been at work on this problem—collecting and analyzing the facts, so that every foot of lumber it sells for crating purposes

will deliver 100% service and at the same time effect the greatest saving for the shipper.

As a result, this organization now offers to the industrial user of crating lumber the services of a practical crating engineer. Without cost to you we will send this man to your plant, to check up your crates, and with the co-operation of your shipping department to redesign your shipping containers to fit in each case the products to be packed.

Lumber is the standard material for shipping containers. For this purpose, this organization offers to factory and industrial buyers, from its fifteen distributing points, ten different kinds of lumber of uniform quality and in quantities adequate to any shipper's needs.

THESE illustrations show how a few important details of construction can increase strength of a crate. In the upper picture note that frame members are held by two nails driven in a row, while in the other three nails are used and they are staggered. Greater holding power is thus obtained and danger from splitting is materially reduced.

The double mitre on the diagonal brace shown below also gives a bearing against the upright frame member, thus transmitting any thrust it might receive directly to the frame of the crate rather than to its fastenings as would be the case above.

The proper size, thickness and kind of lumber, and the size and spacing of nails will vary with the requirements of each individual crate. The strength of a crate can often be increased when necessary without increasing the amount of lumber used.

A BOOKLET, "Better Crating," which outlines the principles of crate construction and explains the personal service of Weyerhaeuser engineers, will be sent on request to manufacturers who use crating lumber.

Weyerhaeuser Forest Products are distributed through the established trade channels by the Weyerhaeuser Sales Company, Spokane, Washington, with branch offices at 208 So. La Salle Street, Chicago; 1015 Lexington Bldg., Baltimore; and 4th and Robert Sts., St. Paul; and with representatives throughout the country.



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# BOOK REVIEWS

*The Cowboy*, by Philip A. Rollins (Scribner's, New York, Price \$2.50.

What the forest fire means to the forest ranger the prairie fire meant to the cowboy of the Western cattle range, so says Philip Ashton Rollins whose book "The Cowboy," is now being eagerly read by everyone interested in the West and particularly in the cowboy, his life and his habits. Mr. Rollins, whose book is a real contribution to the history of western development, says:

"The prairie-fire sometimes produced exciting duties. Fires were frequent; but usually were of small importance, and, if promptly attacked, easily exterminated. At other times however they were terrifying.

"For successive weeks an arid heat and a lifeless air, at 10 o'clock acrid whiffs and a blurred horizon, but at 12 o'clock a biting smell and the horizon gone. Out there, somewhere, was a line of grimy men desperately fighting to stop the march of the advancing flames that the latter might burn themselves out upon their self-selected battle ground. Punchers with eyebrows and eyelashes gone, with wet handkerchiefs over mouth and nose, in mad

haste, but with cool reasoning, 'straddled' the fire; two mounted men, one on either side of the flames, dragging behind them at their lariats' ends a green hide or wet blanket. Other men either mounted or afoot, scarred and intrepid like their brothers, beat upon the fire's side lines with similar utensils or with bunches of brush.

"The thickness of the grass or the velocity of the wind might generate heat or movement such as to make straddling unfeasible, and then the only remedy was to 'back-fire' across the enemy's prospective line of march. Along the zone selected for the 'back-fire,' a horseman trailed a bundle of burning fagots. The flames thus started were held in check on their homeward side by straddling them.

"In the early stages of the contest, living warnings intermittently came out of the wall of smoke, for an occasional deer or antelope, a solitary horse or steer would rush, wild-eyed past the toiling men. Thus the best experts on the subject of danger had advised human retreat, but such retreat was not to be considered.

"The last of these fleeing animals had passed through the line of fire fighters.

There was a sudden puff far in the rear, and in an instant the prairie behind the men was ablaze. It was mount and reach the shelter given by a projecting hill, by the bottom of a coulee, by a grassless 'buffalo wallow,' or, in the language of the craft, it would be 'fried gent,' 'no break-fast forever,' and the 'long trail to Kingdom Come.'

"With safety thus attained, the next and an immediate task was to gallop down to leeward, again to move out before the flames, and to re-engage the enemy upon the same tactics as before.

"There was peril in the extensive fires, for they would sulk and make slow progress for a time, and then would leap forward in irregular frontage more rapidly than a horse could run. They, on occasion, would travel for many miles. The peril was particularly for such as had to fight the flames and so, having to stand their ground, could not materially shift position. But any one who merely sought escape would find that, through the average fire, ran here and there safe lanes made up of interrupted and quite dissimilar elements, a stream's bed, a rocky ledge, a bit of grassless earth."

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**PARK TOURIST SEASON**

Opening and closing dates for the tourist season in the parks for 1922 are announced by Secretary Fall, of the Interior Department, as follows: Crater Lake National Park, Oregon, July 1 to September 20; General Grant National Park, California, May 24 to October 10; Glacier National Park, Montana, June 15 to September 15; Grand Canyon National Park, Arizona, open all year; Hawaii National Park, Hawaiian Islands, open all year; Hot Springs National Park, Arkansas, open all year; Lafayette National Park, Maine, June 1 to November 1; Lassen Volcanic National Park, California, June 15 to September 1; Mesa Verde National Park, Colorado, May 15 to November 1; Mount McKinley National Park, Alaska, no official season (summer only); Mount Rainier National Park, Washington, June 15 to September 15; Rocky Mountain National Park, Colorado, June 15 to October 1; Sequoia National Park, California, May 24 to October 10; Wind Cave National Park, South Dakota, June 1 to September 30; Yellowstone National Park, Wyoming, June 20 to September 15; Yosemite National Park, California, open all year; Zion National Park, Utah, May 15 to October 15.

On the opening date the park hotels and camps will be open and prepared to accommodate visitors. The first scheduled motor trips will be operated and until the closing date scheduled trips will be made daily. Motor tours in the National Parks are famed as offering the most fascinating scenic trips in the United States and are comparable to any in the world. The railroads have announced greatly reduced round trip summer excursion rates with liberal stop-over privileges, effective June 1st. (No war tax). The costs of all park trips are remarkably low. All charges for public utility service in the National Parks are strictly regulated by the National Park Service, which has direct supervision over the parks and which cares for their thousands of visitors each year.

**WOOD FOR THE NATION**

The following are extracts from a report by United States Forester W. B. Greeley: The United States produces over one-half the entire lumber cut of the world, and uses 95 per cent of that amount right here at home.

We have over 80 million acres which have been denuded to the point of absolute idleness so far as the production of any timber of commercial value is concerned; this is an area greater than all the forests of France, Belgium, Holland, Denmark, Germany, Switzerland, Spain and Portugal. We have other enormous areas of cut-over land now growing but a fraction of the amount of timber which they might produce. We are adding to these areas of idle or largely idle land from 10 to 15 million acres every year, as forest fires and destructive logging progress.

The forest problem of the United States

is primarily the problem of using millions of idle acres.

It takes a long time to grow merchantable timber, and the vast public interests at stake cannot, under a real national conception of the problem, be left to the turn of profit and loss or the business policy of the individual.

Four-fifths of our forests are now in private ownership, and in the nature of things a large proportion will remain in private ownership. Our future wood supply will be far from adequate unless some definite provision is made for keeping private woodlands in the continuous production of timber, on some basis equitable to their owners.

The public must realize that the present methods of taxation of growing forests in many regions are equivalent to taxing a farm crop twice a week during the growing season and may largely eat up the value of the timber before it is grown to a marketable size.

Agriculture is the largest wood-using industry in the United States. And on the other side, the farmers of the country taken together are its largest timber owners. Farm woodlots the country over reach the enormous total of 191 million acres, more than all the great holdings of commercial timberlands. The farmers have the most permanent interest in a systematic national plan of reforestation. They will find profit in taking their own woodlots out of the slacker class and they may well take a hand in bringing about a common-sense plan of reforestation based upon necessary and equitable public control.

**FORESTRY INSTRUCTION**

"If we are to avoid a grave economic crisis fifty years hence, it becomes necessary that the present generation, particularly the children, learn more about our forestry problems and requirements," said C. E. Lawrence, one of the members of the Conservation Commission of Michigan.

"Those who have had to do with the dissemination of forestry problems and education have been confronted with a most discouraging task in the past. Their efforts have met but with slight response in the majority of instances," continued Mr. Lawrence. "I believe that instruction in forestry should have its inception in the public school. The children should be taught to know, to understand and to appreciate our trees, timber growth, preservation and conservation, all of which have been sadly neglected since the time Michigan ruled as the first State in the production of white pine. The history of all great movements, whether it be prohibition or the Audubon Society, found their inception in the minds of the children. If we are ever to realize the economic necessity of reforestation in Michigan; if the State is ever to become able to produce sufficient timber within its own confines to supply its requirements; if our wood-working industries are to continue in existence; if we are to

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RED MULBERRY TREES

This remarkable photograph was sent in by Dr. Henry Thew Stephenson, and shows two trees on the University Campus at Bloomington, Indiana, which were twisted together when young. Each stem is now about eight inches in diameter.



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Write for announcement giving full information.

## Bryant's Logging

The Principles and General Methods of Operation in the United States. By Ralph Clement Bryant, F.E., M.A., Manufacturers' Association, Professor of Lumbering, Yale University, 590 pages, 6 by 9. 133 figures. Cloth.....net, \$4.50

A discussion at length of the chief facilities and methods for the movement of the timber from stump to manufacturing plant, locally logging railroads.

save the tremendous amount of money now spent in freight rates in hauling lumber from distant points to Michigan; if we are to continue as a State known from coast to coast as a 'sportsmen's paradise,' we must be brought to realize that a sensible and sane conservation of what little timber growth we have left, together with the constructive program of reforestation and our denuded areas must be inaugurated. There is no better place to start this work than in the public school. The children of today are the future citizens of this State and they can not know too much about Michigan's forests and what she needs."

### WATER SUPPLY PROTECTED

Announcement has just been made by District Forester Geo. H. Cecil, of Portland, Oregon, of the signing of an agreement by Henry C. Wallace, Secretary of Agriculture, and George O. Knowles, Mayor of Cottage Grove, for the protection of the water supply of the town of Cottage Grove, Oregon. This agreement provides that the watershed of Dinner Creek, an area of some 6,000 acres, within the Umpqua National Forest, will be protected from fire, use by livestock, from camping or other human use, in order that possible contamination of the city's water supply may be guarded against. No timber will be allowed to be cut within the area prior to 1952, "except where necessary in connection with serious forest fires, insect infestation, or other catastrophes which necessitate in the public welfare the immediate salvage of dead or infested timber. No permanent buildings nor camps nor habitations shall be permitted on the area above the intake of the town's water supply system, and all persons employed therein or occupying such lands for any purpose shall observe the strict sanitation regulations as may be agreed upon by the Forest Service and the City of Cottage Grove." The Secretary agrees also, so far as practicable with the means at his disposal, to extend and improve the forests upon this watershed by seeding and planting, and by the most approved methods of silviculture and forest management. The City agrees to cooperate actively with the officers of the Umpqua National Forest in the protection from fire and patrol of such lands, and to pay the salaries of such additional guards as shall be needed to insure protection.

Within the states of Oregon and Washington eighty-four cities and towns derive their water supplies wholly from the National Forests, and the United States Forest Service protects from fire and deleterious use the watersheds from which these water supplies are derived. The most notable example is that of Bull Run Watershed, within the Oregon National Forest, which supplies the city of Portland with its entire water supply, and which is very jealously guarded from any use by human

beings or livestock. United States District Forester Cecil says that the two main functions of the National Forests are the production of timber and the protection of water supplies, whether these be for municipal use, for irrigation or for water power, and that other uses, such as by livestock and recreation, important as these have become, must always be harmonized with the two primary functions of timber production and protection of water flows.

### WHITE PINE BLISTER RUST

Urging immediate action in protecting white pine trees against blister rust, the Bureau of Plant Industry, United States Department of Agriculture, recommends the destruction of all wild and cultivated currant and gooseberry bushes within 600 to 900 feet of five-needled pine trees in regions where the disease is present.

"Do not wait until your pines begin to die, but protect them immediately. Delay means ultimate loss" the Department warns in Department Circular 177, entitled Treatment of Ornamental White Pines Infected with Blister Rust, recently issued.

Unless controlled, the circular declares, the blister rust will mar the beauty of many landscapes and remove one of our most valuable crops from thousands of acres of rough land unsuited for agricultural purposes. The forest value of the five-needled pines, which fall a ready prey to the disease in the United States and Canada, is conservatively placed at more than \$1,100,000,000. The annual cut is valued at more than \$80,000,000, and in the United States the white pine ranks third in lumber production. These figures do not take into consideration the value of young native reproduction or ornamental trees that beautify many homes and parks, or the value of white pine forests in protecting watersheds.

### A ROBIN'S GRATITUDE

Mr. C. M. Roberts, Superintendent of Itasca State Park, Minnesota, has written the following letter to Mr. Cox, the State Forester:

"Mr. Samuel Myers, of Park Rapids, has been having quite an experience with a robin. In 1918 a robin met with an accident which resulted in its losing one leg. Mr. Myers took the bird in and cared for it until it had fully recovered from its injuries. The robin became very tame and did not leave the home until fall.

"Every spring since that time it has returned to the Myers home and stays the entire season, coming into the house and eating out of their hands. The robin appeared again this spring the same as before."



# AMERICAN FORESTRY<sup>385</sup>

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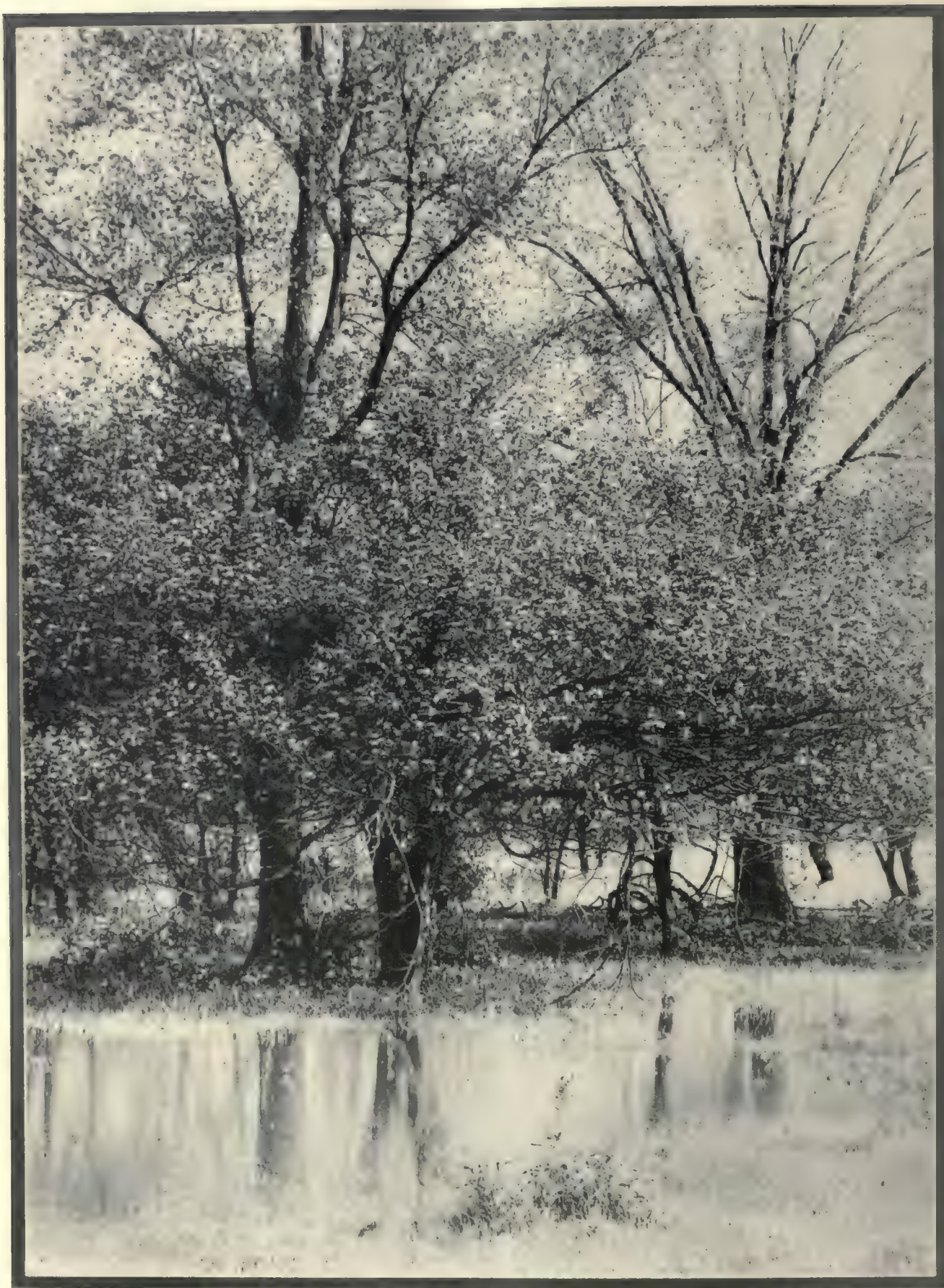
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**"WHEN HAWTHORNES BLOOM"**

Photograph by Eugene Hall



# AMERICAN FORESTRY

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## RATTLE SNAKES

By Will C. Barnes

MANY years ago in Central Arizona a small body of United States Cavalry was camping for the night at a desert water hole. With the troopers was a pack train of about forty mules manned by the usual force of civilian packers.

After supper each man selected a spot on which to lay his blankets for the night—for in that climate tents were an unknown quantity.

The Chief Packer, an old timer in the Southwest went to considerable trouble to make himself as comfortable as he could and after his bed was all made he went to his saddle, a regular cowboy affair with huge tapaderos, and took from it a hair rope tied to his saddle horn, in a close coil.

This rope was about thirty feet long and of the usual type of hair rope made by the cowboys of those days either from horse or cow tails as was most convenient.

This hair rope he carefully laid on the ground clear around his bed and about a foot from it at every part.

I was a "stranger in a strange land" in those days, a tenderfoot of the first water therefore privileged to ask of the Chief Packer "why" as I pointed to this hair rope stretched about his bed.

"To keep out rattlers" was his prompt reply, "no rattler's going to cross a hair rope under any circumstances."

Again my inquisitive "why?"

"Oh, it scratches their belly, I reckon," answered the man as he stepped inside the charmed circle and began his simple preparations for the night's rest.

Evidently my face showed either doubts as to the efficacy of the rope or desire to learn more about the anti-snake fence he had erected about his desert bed room.

"Never heard of that trick?" he continued. I never had. "Well, Sonny, you knock around on the frontier a few years and you're likely to see it done a good many times."



Photograph by Will C. Barnes.

### THE FRONTIERSMAN'S BED PROTECTED (?) FROM THE RATTLER'S FRIENDLY VISITS

The hair rope is the usual cowboy rope of alternate strands of black and white horse hair, and the general belief has always been that the rattler will not, for some peculiar reason of his own, cross it.

surrounded my camp bed with the snake defying contrivance.

Yet not for many years did it occur to me either to question the value of the protection afforded by the hair rope or ask the users of it if they really knew it would perform its duties when the opportunity came and a real live rattler appeared at the barrier.

Though I made it my business to ask the pertinent

Thirty-five years of frontier life leading me all the way from the Mexican border to the Canadian line, most of it spent in the "open" camping wherever night overtook me, justified the prediction of my packer friend for I have seen the all encircling hair rope used by people of every kind, army officers, prospectors, sheep herders, cowboys, hunters and tenderfeet of every grade. Often I myself have



question often, seldom have I found any one able to vouch for its value.

"Did you ever test it out with a living snake?" has been my constant inquiry and the answer has uniformly been "No."

"Did you ever hear of any one who had tested its value?" was my next inquiry, which ninety-nine times out of a hundred brought the same answer, "No."

The odd man has always said "Yes. I heard of a man who said he knew a man who tried it out." "Yes, yes," I have answered eagerly, "what happened? Did it turn the snake?" "Oh," he said, "it turned the snake all right" was the ready response.

Out of hundreds of inquiries I never was able to find a single person who had first hand information on this subject. So I finally began to carry a hair rope on my saddle horn intending to demonstrate the truth or falsity of that piece of folklore in a way that would admit of no possible question.

Spending from three to five months each summer on horseback in the far West I deemed it an easy matter to have plenty of opportunities for such a test nevertheless no sooner had I started in on the plan than the rattlesnakes all seemed to have disappeared from sight and in six years of horseback travel I "met up" with but half a dozen rattlers, two in Arizona, one in New Mexico, two in California and one in Utah.

The New Mexico chap was a lusty fellow and leaving the Forest Ranger who was with me to hold him at bay I chased back to where we had left our horses only to discover that the hair rope was gone, someone having taken it from my saddle to tie a horse in camp and I had left without it. It was ten miles to camp so we missed this chance.

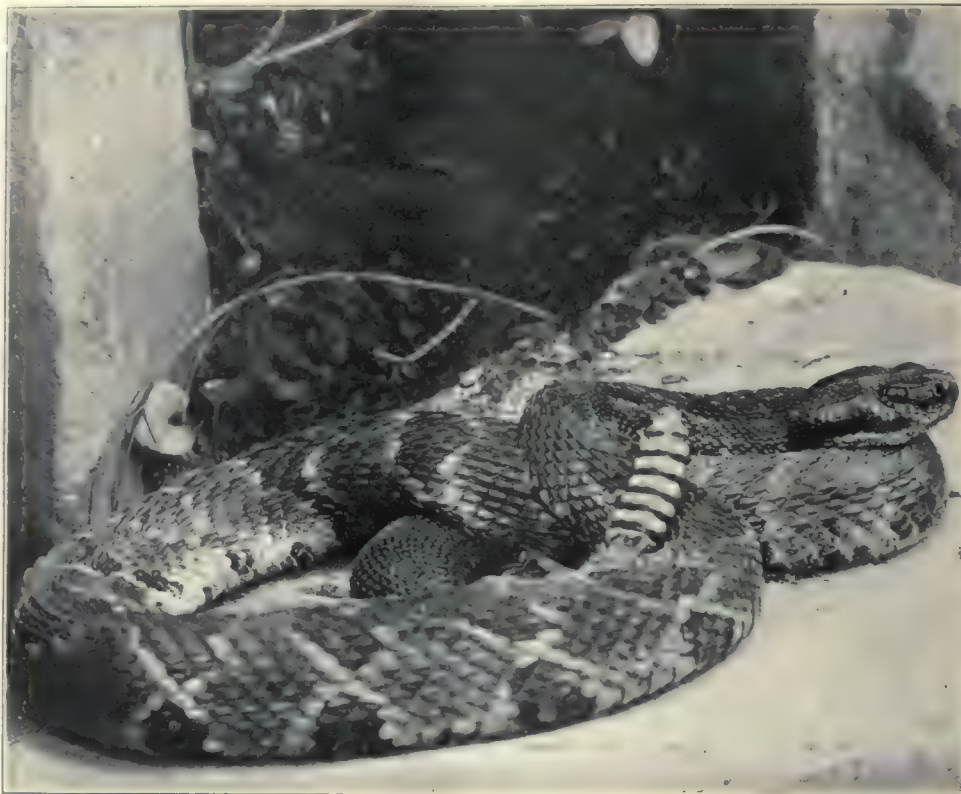
The next snake I "met up" with was in the Mogollon Mountains of Arizona, but his snakeship was in such a rough, rocky, lava formation that we could not lay the

rope where it must either be crossed or stop his progress.

The third got clear away from us under a large rock but the fourth and fifth in the high Sierras of California and the last in southern Utah each submitted to the test

and proved the belief in the hair rope as a safety first for rattlers was not well founded for they each went over the rope wherever they met it. Great care was exercised not to disturb or tease each snake in order that his condition might be as nearly normal as possible.

We laid the rope in a straight line where the snake must either cross or go around the end to avoid it. in large and small rings about him and even when he



Photograph by J. F. Street.

#### A DIAMOND BACKED RATTLER—READY FOR BUSINESS

An unusually fine specimen fully six feet in length and as large about the "waist" as a man's arm. Of all the rattler tribe, the diamond back is the most subtle and savage. Few of them can be coaxed to eat in captivity and they are always ready to fight.

was moving from us without any attempt on our part to direct his way or annoy him the rope was thrown in front of him over and over again without hindering his movements in the least. He went "over the top" each time with absolutely no hesitation or reluctance.

Of several photographs taken we secured one or two rather good ones showing the snake in the act of crossing the rope which, by the way, was an exceedingly rough hairy one, built to scratch if ever a hair rope was.

Several men whose belief in the theory was almost sublime insisted that the snake went over the rope by elevating his body in the form of an inverted U so that no part touched the rope. The picture shows this not to have been the case, nor did we observe any such effort on the part of the snake. If this action was true it of course knocked on the head the whole theory of safety inside the rope. Thus has systematic investigation and observation wiped out another myth of the plainsmen. Cast into the discard along with the equally prevalent notion regarding the family and familiar relations said to exist between rattlers, Prairie dogs and owls.

Not long ago a well known writer made the statement that although he had spent many years in portions of the United States presumed to be well populated with rattle-



snakes, yet he had never known personally of any one being bitten by one of these reptiles and dying from its effects.

Personally out of a dozen cases of people being bitten by rattlesnakes coming under my direct observation, two of them have died.

Among my business ventures was a "Curio" store in the city of Phoenix, Arizona, where we bought many hundreds of baskets from the nearby Indians. One day an Indian brought in a gunny sack two large wicked looking rattlers. He seemed so cast down at our refusal to buy them that he was finally given two bits for the two which for safe keeping were dumped into a box covered with wire netting.

Phoenix was full of winter tourists and the two snakes attracted considerable attention, so much so, that we had a glass covered case made for them and they were regularly installed as part of our "scenery" and they certainly justified their cost.

Unfortunately, however, for our peace of mind the Indian who sold us the first two, spread the good news and we soon found ourselves facing a serious problem, for snakes were daily coming to us in large and small assortments, covering every kind of snake known in that part of the world.

We wanted to encourage the Indians into bringing us their basketry work, so to keep them good natured we established a regular price of twenty-five cents a head for rattlesnakes, no matter how large or small, but we had to draw the line at all other kinds of snakes.

Thus we soon acquired so many that we began to seek an outlet for them which we did through an advertisement in

an Eastern sporting paper. This brought us orders from every part of this country and many cities in Europe.

Gila Monsters were added to our live stock investments and it was seldom we had less than fifty rattlers or a dozen Gila Monsters on hand at once. Occasionally the demand would be so great as to leave us without a single specimen.

We kept the most of them in a large open cage out of sight of the public but had a fine glass covered cage which held half a dozen unusually large specimens which we placed in the store for public inspection.

Among other visitors to the snake case was a French man named Michael Bourgenon. He was an educated man with a scientific bent, who had travelled all over the world, being especially interested in animals of all kinds. He was a regular correspondent of several scientific journals.

A few weeks before the incident here related Bourgenon attended the wonderfully interesting and impressive Snake Dance given by the Hopi Indians of Northern Arizona. He came to Phoenix from this ceremony thoroughly convinced that he could handle rattlers quite as easily and safely as did the Hopi devotees in their rites.

At that time we had an unusually fine specimen of a Diamond Back rattler, full six feet in length and as large about the "waist" as a man's arm. Of all the rattler tribe the Diamond Back is the most surly and savage.



HE CROSSED IT NOT ONLY ONCE, BUT SEVERAL TIMES

Photographs by Will C. Barnes.

#### ANOTHER MYTH EXPLODED

The lower picture shows the rattler well within the hair rope, which legend has always claimed he would never cross, a fallacy of which the upper insert is "documentary evidence."



Few of them can be coaxed to eat in captivity and they are always alert and ready to fight.

On September 29, 1898, about 10 A. M., Bourgenon opened the cage door and in spite of all warnings as to the temper of the big fellow insisted on taking the snake from the cage by means of an affair which we used for such purposes.

With the snake out of the cage Bourgenon undertook to try out his theory that the rattler was easily handled if one only went about it in the proper manner. He had seen the Hopi snake dancers pick them up over and over again and noticed that they never attempted to touch them when coiled but teased them until they struck and then before they could recoil caught them deftly behind their triangular shaped heads and the snakes were harmless.

Accordingly Bourgenon laid the big snake on the ground near the cage and teased it until it struck savagely throwing itself as far as any snake can which is never more than one half its length, generally less. He was successful in his first attempt and caught the snake just as he had planned close to its huge head.

Holding it firmly in his right hand he began to stroke the snake with his left. "See," he proudly exclaimed, "I stroke zee belly of zee snake and make him gentle."

Meantime the now thoroughly enraged snake writhed and twisted his rattles making a racket that was fairly blood curdling even to us accustomed to the sound. In its thrashings the snake managed to get a coil or two about the man's arm which undoubtedly gave it a most powerful leverage for suddenly we saw his body begin to slip through Bourgenon's right hand until the head was fully eight inches from the hand. Just how it happened no one could say positively but as he was endeavoring to grasp the reptile closer up to the head with the other hand, the snake sank its fangs deep into the man's right hand between the thumb and forefinger, the huge mouth spreading so wide that when closed on the hand the lower

jaw was under and the upper, with the deadly fangs, on the upper side of the hand, the fangs driven deep into the flesh directly over the large veins that lie between the thumb and forefinger.

With a shriek of terror the Frenchman tore the snake loose with his other hand, leaving one of the fangs buried in the flesh of the stricken hand.

While one man caught the snake and returned him to the cage another grabbed the arm of the now thoroughly terrified Frenchman and with a knotted cord quickly placed a tourniquet about the wrist, twisting it with a lead pencil until it sank deep into the flesh. The lance-like fang was worked from the flesh with the blade of a knife after which the flesh all about the tiny wound was slashed a dozen times in order to make it bleed freely.

Meantime the Frenchman sucked the wound vigorously, his lips being free from any sores or cracks, rattlesnake poison being absolutely harmless if swallowed.

The man, however, had lost his air of bravado and was completely terrorized. In those days we knew nothing of permanganate of potash and whiskey was the only known remedy.

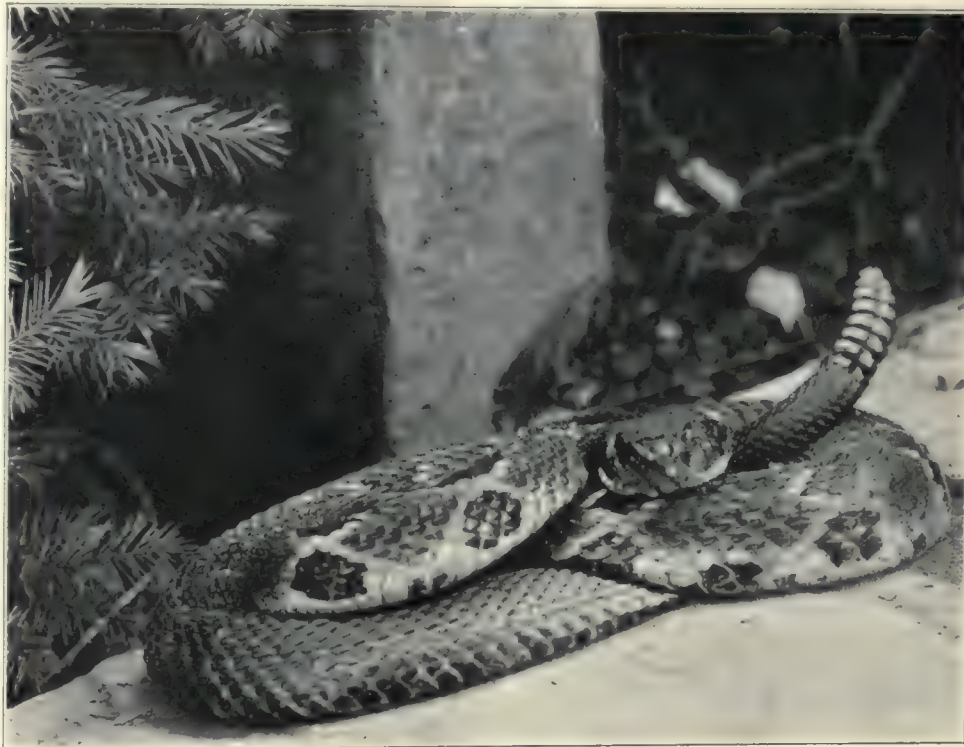
The effect of the tourniquet caused the man so much pain

that we placed another higher up on the arm and took off the one at the wrist.

By this time he was a pitiable sight, and although two doctors did what they could to counteract the effect of the poison the man was dead at 2 P. M. the following day, September 30th, 1898.

His arm began to turn a purplish blue inside of an hour and this condition spread rapidly to every part of his body until, when he died, there was hardly a white spot on him. He died in great pain and although he drank great quantities of whiskey was not by any means "dead drunk."

This sad incident led to the placing of a lock on the "snake den" in order that no more would-be "snake charmers" might attempt to emulate the Hopi Indians.



Photograph by J. F. Street.

#### A POWERFUL DIAMOND BACK—FACE TO FACE

This big fellow is a terrible enemy at all times, with a terrific temper and extremely dangerous when aroused. His bite carries the most deadly venom which, strangely enough, is quite harmless when swallowed.





Photograph by J. F. Street.  
AN UNUSUAL POSE

A splendid specimen caught by the camera in a most unusual and striking pose—practically standing upright.

On May 24th, 1899, a prominent citizen of Phoenix, Mr. M. H. Williams, a lawyer and at the time District Attorney for Maricopa County, Arizona, was at some well known Hot Springs, a short distance from Phoenix.

The buildings at the Hot Springs were rather primitive and the one occupied by Mr. Williams was of adobe with the usual dirt floor of that class of house. Sleeping on a low cot Mr. Williams awoke one morning, threw back the bedding and swung his legs out of the cot and onto an angora goat skin lying on the floor. Coiled up on the rug was a rattler of the "side winder" kind, known to scientists as the "horned rattler" from small horn-like protuberances on each side of its head.

Mr. Williams' right foot landed squarely on the coiled snake which sank its fangs deep into the instep. Although everything possible was done to save his life Mr. Williams died in great agony within eight hours from the time the snake struck him.

In addition to these two deaths I have personally

known half a dozen men and one woman who were bitten but recovered.

The last was a forest ranger named Blood, in the Sierras of California during the summer of 1919. He was hunting near the little hamlet of Northfork when a squirrel in a tree caught his eye. Gun in hand he was walking slowly around the tree looking for the little animal above him. He stepped fairly onto a big Diamond Back whose frantic rattling caused him to jump to one side. The Ranger was wearing a low shoe and as he raised his foot the snake lunged viciously at him, striking the leg just above the ankle bone, the fangs both penetrating the flesh through the sock and under drawers.

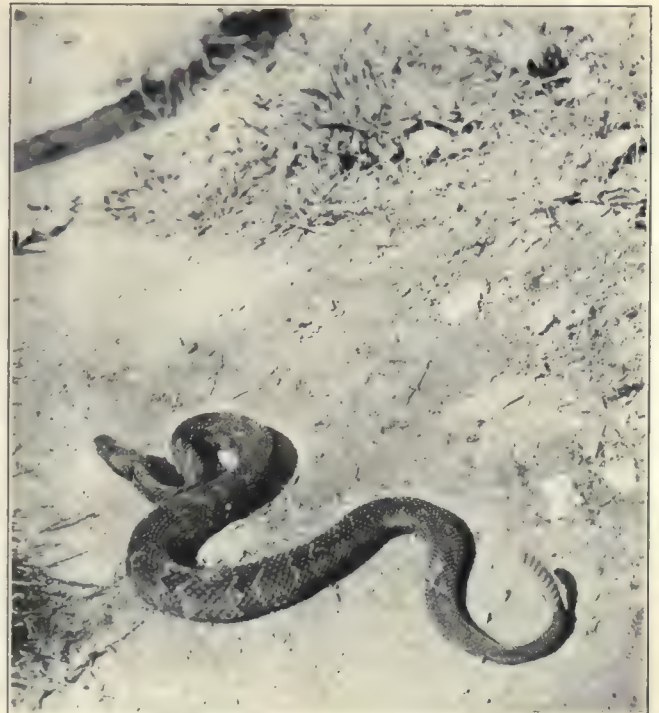
His wife who was with him quickly made a tourniquet and placed it above the knee, then helped her husband to a camp nearby where with a razor blade the wound, plainly visible, was deeply slashed, causing an excessive flow of blood.

A phone message to the village brought a syringe and some permanganate solution which was plentifully injected into the flesh in the vicinity of the wound, about thirty minutes after the bite was inflicted.

The leg by this time was frightfully swollen and the man in great pain.

The tourniquet was loosened about every thirty minutes and the blood allowed to circulate for a few seconds in order to allow the poison to enter the venous system in small amounts, which was all done in strict accordance with the most modern methods of treating snake bites.

The nearest doctor was at Fresno, sixty miles away. He could not leave home but after hearing what treat-



Photograph by J. F. Street.  
THE SIDE WINDER RATTLER

This rattler is known to scientists as the "horned rattler" from the small horn-like protuberances on each side of its head. Note the frog in the mouth of the snake, being quickly devoured.



ment had been given said everything was being done that was possible and his presence was unnecessary.

Inside of twenty-four hours the man's whole leg was frightfully swollen, clear to the hip and had turned a dark ugly blue. He was in great pain and the feeling was as if the skin was being torn from his bones by red hot pincers.

The maximum was reached about the third day and from that time the discoloration gradually subsided although at thirty days there were large blue blotches on the hip and upper leg. Mr. Blood was unable to bear his weight on the foot without pain for nearly six weeks, and was bedridden for three full weeks.

One of the most interesting cases was that of the well known author, explorer and scientist, Mr. George Wharton James.

In the summer of 1901 Mr. James attended the Hopi Snake Dance, a ceremony he had witnessed several times before during his many years in Arizona.

Mr. James was deeply interested in rattlesnakes, had dissected many specimens, handled living ones frequently and was at this time studying the problem of an antidote for their bite.

Returning from the dance he visited Phoenix where he was anxious to secure a quantity of the poison from the rattlers in our possession. Fearful of the results he was urged not to undertake the job but he insisted he could handle them without any difficulty or danger.

Rather reluctantly he was given the key to the cage. At that time we had an unusually large and active Diamond Back about five and a half feet long. Mr. James grabbed his snakeship in the usual manner, about the neck just back of the head.

The snake showed fight from the first and the crowd about him watched the affair with intense interest.

Mr. James, perfectly cool and collected, asked us all to observe the animal's actions. Slowly the snake prepared to defend himself in his own way.

His mouth was opened to its uttermost extent, the jaws almost at right angles to the body, the ugly fangs unhinged and erect, the enveloping sheath slowly receding from them. Meantime he was apparently slipping slightly through the man's thumb and finger, so much so that he gained considerably in length above the grasp. It was probably a muscular elongation and possibly to some extent the body of the snake slipped through the almost vise-like grip in which he was held by the mere muscular contraction and expansion of the struggling reptile.

Suddenly with almost lightning-like rapidity the snake gave its head a peculiar twist which threw its upper jaw into such a position as to allow it to make what may be called a side swipe at the lower part of Mr. James' thumb.

Only one fang touched the flesh, but so strong was the stroke that the needle-like weapon sank deep into the fleshy part of the thumb and with a downward slash it tore a sliding gash across the member, an inch long and three-quarters of an inch deep.

Never for a second did James lose his nerve and he was the coolest man in the party. Still hanging onto his snake he called on every one to note certain elements of the attack.

His thumb and wrist were drenched with the poison, but he pointed to the fact that it had all come from the fang that made the wound. He pried the snake's mouth open and pointed out to the almost breathless onlookers the empty gland or sac on one side and the full one on the other.

Wounded, though he was, the scientist in James was stronger than the fear of a fatal result. There had always been the belief that the ejection of the poison was involuntary, that the very act of striking and sinking the fangs into anything carried with it the expulsion of the poison.

The fact that in this instance only one sac had been emptied convinced James that the snake absolutely controlled the matter and that in his case at least, the snake only released the poison that found its way through the fang which did the work.

Still holding the snake Mr. James, wholly unmindful of his wounded thumb manipulated the head so that he secured over half a teaspoon of the poison from the full sac which was poured into a small vial he had provided for the purpose.

Then, and not until then, did he throw the snake back into the cage and allow his wound to be looked after.

A tourniquet above the elbow was the first thing, followed by liberal injections of permanganate with continued applications of the hottest water he could stand.

The usual discoloration set in with terrible pains and extreme soreness, especially in the abdomen, and for several days he was a mighty sick man and it was about two months before the hand and arm could be used.

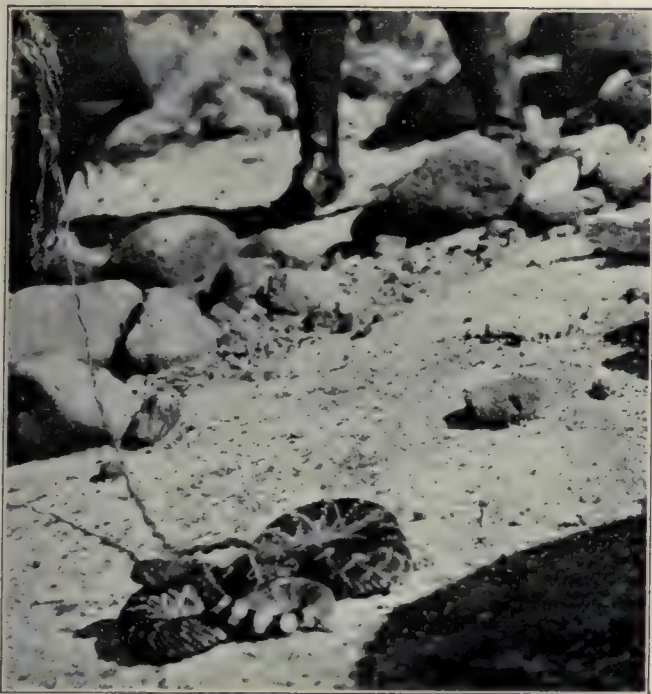
I firmly believe the only thing that saved him from death was the fact that the point on the thumb where the long, deep wound was made, was without large veins so that the poison did not quickly enter the venous system. Otherwise nothing could have saved him for it was at least three full minutes after the snake struck before James ceased his scientific investigations and made any effort to save himself from a frightful death.

Recently I wrote Mr. James about his experience and especially as to the after effects.

"The after results were singular," he writes. "For over eighteen months my stomach swelled and solidified every two or three months; was as sore all over as a boil, and suffered intense agony for several days and then would pass off. Some one advised me to go to the famous Passo Robles mud springs in southern California. I did so and took a mud bath daily for ten days and have never had a recurrence of the attacks."

This aftermath of Mr. James' incident recalls the well authenticated case of a man named Shindler, an employee of the National Museum at Washington, D. C. On June 1st, 1882, Shindler was bitten on the finger by a small coral snake. Violent pains followed, but in a





Photograph by Will C. Barnes.

#### HIS PROTEST WAS HIS HIS UNDOING

When his warning rattle was sounded, a piece of rope caught the noisy gentleman.

few days the man was apparently fully recovered. Every year, however, for twelve succeeding years, on the date of the original bite, the pains returned, a sore formed, the sore would burst and the nail of the finger invariably came off. This process usually took about two weeks from beginning to end.

Finally he learned of a Brazilian snake cure, an herb or vine "*Micania Guacho*," the leaves and stem of which when made into an infusion and taken internally just before the annual visitation caused a cessation of the sore finger and the loss of the nail but up to last accounts obtainable the pains still continued on each anniversary but not for so long, nor were they as intense.

An equally interesting case is that of a Mexican boy in Phoenix, Arizona, named Teodoro Ruiz. My first knowledge of this case was in November, 1911, when the boy, then about twelve years of age, was found wandering alone on the desert, a few miles from the city, by a passing driver who, unable to get the lad to talk and realizing something was wrong, took him in his buggy and left him at the Sheriff's office when he reached Phoenix. Attaches of the office knew him well as he had been brought to them before.

Briefly, the boy had been bitten by a rattler about four years previous, from the effects of which he lost completely the power of speech. Before the accident he was a perfectly normal child in every way. Each year, however, since the day he was bitten, as the date nears on which he received the rattler's venom into his system, his whole demeanor changes, he becomes restless and unless carefully watched leaves his father's home and alone and on foot takes to the desert where he wanders aimlessly about picking up and playing with bugs, toads,

lizards and any such thing he sees. Unfortunately no one has ever followed the boy to note whether or not he finds and handles snakes while in this condition.

Generally his distracted parents rescued him from the desert or some one finding him there brought him back to them for his story was known to every one.

He seldom offered any objection to such action on their part the wanderlust evidently being soon satisfied.

Always there are questions as to the fangs of rattlers. Briefly, they are sharp as needles and hollow, the poison being ejected from the sac behind or at the base of each and through this thread-like opening that runs down the center of the fang.



Photograph by J. F. Street.

#### THE RATTLER'S FANGS

The fangs are as sharp as needles and hollow, the poison being ejected from the sac behind or just at the base of each, and through this thread-like opening that runs down the center of the fang.

In repose the two foremost fangs lie close to the jaws encased in a fleshy covering or sheath. Under excitement they emerge from this sheath and quickly rise to the upright position in which they are always pictured. If a main fang is artificially removed or accidentally broken the next one gradually moves forward and takes its place.

Dr. Weir Mitchell who spent many years of his most industrious and valuable life studying snakes and especially rattlers, in discussing this matter says there are

(Cont'd on Page 396)



# DEFORESTATION AND EROSION

By S. W. McCallie, State Geologist of Georgia

**T**HE configuration of the earth's surface as we see it today is due largely to the erosive action of running water. The hills, the ridges, and the mountains, as well as the intervening valleys, owe their origin to this destructive agent.

Rain as it falls on the surface of the earth is either evaporated, taken up by the soils, or runs off from the surface to swell the streams. Only that part of the rainfall last mentioned is discussed in this article as it alone has direct bearing on the subject under consideration.

The amount of surface run-off of rainfall of any

precipitated mostly in the form of hard showers, and steep hill slopes to accelerate the flow of water, thereby greatly augmenting its erosive effect. Illustrations of the erosive effect of rainfall are here seen in a most striking manner on every hand. Thousands of acres in this region within the last few years have been made worthless for agricultural purposes by the destructive agent of rain wash, as a result of the removal of forests.

Some idea of the destructive effect of rain wash may be had by the study of the individual streams which drain that region. The Savannah River, for instance, is a good



IMMENSE ERODED GULLEY IN THE MOUNTAINOUS SECTION OF NORTH GEORGIA SHOWING HOW THE VEGETATION STOPS THE EROSION BY CHOKING THE GULLEY

given region depends chiefly on three conditions, namely, the rate at which the rain falls, the porosity of the soil, and the slope of the surface. In other words, the maximum erosive effect will take place when the rainfall is in hard showers on steep hill slopes with only moderately porous soils. On the other hand, in the case of a long continuous, slowly, falling rain, extending through many hours, the total amount of rainfall may be quite large but the run-off will be small or negligible.

Applying the principles above enumerated to Georgia, it is found that surface erosion is most active in the northern part of the state. Here we find a heavy rainfall pre-

illustration. This river, together with its tributaries, drain much of the mountain area of that part of the state. The data which has been collected in the last twenty years by the State Geological Survey and the Federal Survey on the Savannah River shows that at present it is carrying to the Atlantic Ocean annually more than 2,50,000 tons of suspended matter. This means, interpreted in car loads (fifty tons each) that the river is carrying to the sea more than 135 car loads of soil wash daily.

This enormous wash from the drainage basin of the Savannah River is now probably several times greater





HUGE GULLIES, "BAD LANDS OF GEORGIA," NEAR LUMPKIN, STEWART COUNTY, SOUTH GEORGIA. ONLY A FEW YEARS AGO THE POSITION OF THESE GULLIES WAS OCCUPIED BY A FERTILE COTTON FIELD

than it was originally before the lands were cleared for agricultural purposes.

There appear to be only three practical methods open to man to retard the wash of the soil, namely, terracing,

deep plowing and the protection of the forests. The forest, including vegetation in general, is a great protector of soils from the erosive action of rain wash. The vegetable matter accumulating upon the surface



HUGE GULLEY IN MIDDLE GEORGIA SHOWING IN THE DISTANCE A CORN FIELD BEING ENGULFED. THIS LAND IS RAPIDLY ON THE WAY TO THE CONDITION OF THAT SHOWN ABOVE



not only protects the soil from the beating action of the rain drops, but by retarding the run-off, it causes much of the water to disappear under ground or permits it to evaporate from the surface.

While the most widespread land wash of the state is to be seen in the mountainous section where the forests have been removed, it is not by any means confined to that section alone. We have remarkable instances of soil erosion in the Wilmot gulleys near Thomaston in middle Georgia, and in the noted gulleys near Lumpkin in the Coastal Plain. The huge gulleys here referred to attain a depth in places of sixty feet or more, and are seen traversing fields which less than fifty years ago were cultivated in cotton. The primary cause of these huge gulleys is the cutting away of the forests from the steep hill slopes which border the valleys of the small

streams.

It is interesting to study the life history of a gulley in the uplands of the Coastal Plain. They have their beginnings in small washes that make their appearance soon after the forests are removed from the hill slopes. From year to year the gulley increases its length and depth. The downward cutting continues until it approximates the base level of the valley below. Here the water ceases to deepen the gulley but spends its energies in widening its lower end. At this stage of its life history vegetation in the form of old field pine, blackberries, etc., begin to grow in the lower reaches of the gulley. Erosion now ceases and a soil is formed.

Here we have a life history of a gulley produced by the cutting away of the forest on the hillside and arrested by the same agency. A case of nature healing its own wound.

## RATTLE SNAKES

(Cont'd from Page 393)

generally from eight to ten reserve fangs and that frequently this replacement process takes several weeks.

Dr. Mitchell also refers to the popular idea of a "hiss" which every snake is believed to possess. In the case of rattlers he says that repeated experiments satisfied him that with this class of snakes this hissing sound is the air expelled from the reptile's body by the violence of its muscular effort in casting itself forward to strike its victim and not a method or process of its protective or combative system.

As for the famous caudal appendage of the rattler, both Dr. Mitchell and Dr. Stejneger of the Smithsonian Institution agree that a button requires about two or three months to grow to its maximum size, the summer growth being more rapid than in winter, that the first button, or rattle, is present when the snake is born and at sixteen months a caged rattler in Dr. Mitchell's collection had six rattles. One or two come off with each shedding of the skin—an annual occurrence—and are frequently broken or injured or come off naturally so that they bear no possible relation to the age of the wearer. The rattles are an indication of the snake's condition; well fed they are large and grow fast, but under starvation the rattles are small and grow very slowly.

Occasionally in our snake cages we would discover some morning all the way from five to a dozen little snakelets. There always followed a vast amount of discussion as to their mode of birth.

"From eggs just like a bird," declared some who quoted various experience to prove it. "From their mother just as puppies are" vowed others who offered equally convincing proof as to their claims.

A study of the authorities, Drs. Ditmars, Mitchell,

Stejneger and others, proved each to be right—within certain limitations.

The facts are that as with some flies so some snakes, such as water snakes, garter snakes, and rattlers, are viviparous, i. e., they bring forth their young alive, while bull, black and gopher snakes and others of this class are oviparous and their offspring comes into this world via an egg, just as birds and turtles do.

If bitten by a rattler do not lose your head. First place a ligature on the limb between the wound and the heart. If on the body where such a thing is not possible your chances for recovery are greatly lessened.

Second, scarify the wound with a keen knife, knead the flesh so as to encourage bleeding which really washes the poison from the wound, suck it vigorously, if your lips and mouth have no broken places.

Don't leave the ligature in one place or closed down for more than ten or fifteen minutes without loosening it for a moment to allow the blood to flow. This permits the poison, if in the veins, to enter the rest of the body in small amounts and minimizes its effect.

Do everything to produce profuse sweating in the patient. Give alcohol only in small doses, a teaspoonful at the most, avoid ammonia as a stimulant and never give doses of whiskey except as alcohol. "People do not recover from snake bite," agree all these authorities, "because of the whiskey used, but in spite of it."

And, finally, don't undertake to emulate the Hopi Indian. He and his ancestors for a thousand years back—for four hundred of which we have authentic records—have been handling and "worshipping" these reptiles and even they are not infrequently the victims of misplaced confidence and are bitten and seek refuge in their mysterious and so far unknown cure.



# EDITORIAL

## SPEAK A WORD FOR FOREST EXPERIMENT STATIONS

**T**HE time for talking in support of forest experiment stations ought to be long past, as it is in the case of agricultural experiment stations. Unfortunately, such is not the case. A lot of talking remains to be done, and if foresters and those interested in forestry do not do it, who will?

The fact that the need for forest experiment stations is obvious to the forester does not mean that it is equally obvious to other people. The present status of forest experiment stations is proof thereof. As a matter of fact, the conception of a forest experiment station held by the man in the street is about as clear as a foggy night. Appreciation of the need for experiment stations is imperative because they are as necessary to the progress of forestry as agricultural experiment stations are to the progress of farming. Without adequate and properly equipped experiment stations, we can not hope to handle the forest problem efficiently and economically.

There has been much talk pro and con about forest fires, taxation, legislation, the need for this, and the need for that, but relatively little has been said for forest experiment stations. Perhaps it is because the need is so obvious. We hope so but are inclined to be skeptical in view of the present status of forest experiment stations in this country. We have to deal with some 463,000,000 acres of forest land. Some of it is well forested, a large part of it is poorly forested and over

80,000,000 acres is an idle waste. We have got to learn how to make this land most productive in producing timber. To do that we have, among other things, got to attract private capital to it. The surest way to do that is to demonstrate what these lands are capable of doing in the way of forest production. We could, to be sure, go ahead on a guess and try plan and make some very costly mistakes and encounter many delays in solving the many problems involved. One may search all night in the dark for a penny which he could have found in a few seconds with a tiny light.

Foresters are quite often criticized because they can not make definite statements or predictions with respect to forest growth and forest practice under many conditions. They would be foolish in attempting to do so where definite knowledge is lacking. Forestry and the utilization of forest lands in this country must be worked out through the forest experiment stations in exactly the same way that agriculture is being developed through the agricultural experiment stations. The area of improved farm lands in the United States is only slightly in excess of the area of forest lands. The farm lands are producing annually products ten times greater in value than the forest lands, but the Government is spending for agricultural experiment stations and for agricultural research one hundred times the amount it is spending for forest experiment stations.

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## FEDERAL TAXATION OF FOREST PRODUCTS

**T**HE recent decision of the Supreme Court of the United States, declaring the Child Labor Tax Law to be unconstitutional, is now the subject of much speculation among foresters because of the possible application of the court's decision to certain forestry legislation which has been proposed. That which seems most likely to fall within the scope of the court's decision is embraced in the Capper bill, the constitutionality of which has been challenged by some ever since it was proposed.

A comparison of the principles of the Capper bill and the Child Labor Tax Law indicate that in essential points they are much alike.

The title of the Capper Bill is "A bill to control forest devastation to raise a revenue from forest products, and for other purposes." It includes within its provisions "all private land within the United States which is now or hereafter in forest;" and it defines forest devastation as "the harvesting of a forest crop otherwise than in compliance with standards established by regional and

local regulations," which are to be made by the Secretary of Agriculture from time to time "to secure a continuous succession of forest crops of reasonable quantity and quality."

It requires every operator to classify as standard products, or as products below standard, all products produced by him during each year, and to make return thereof. It imposes upon every operator an excise tax on the privilege of harvesting forest crops of 5 cents per thousand board feet in respect of standard products, and of \$5 per thousand board feet in respect to products below standard. It authorizes the Secretary of Agriculture and the Commissioner of Internal Revenue, to cause any officer or agent designated by either of them to examine records, accounts, books, papers, or memoranda. And for untrue classification or false record or evasion of tax it prescribes a fine of not more than \$5,000 or imprisonment for not more than one year or both.

The Child Labor Tax Law provides that every person operating any mill, cannery, workshop, factory, or manufacturing establishment in which children under fourteen



years have been employed shall pay an excise tax equivalent to 10 per centum of the net profits. It authorizes the Secretary of Labor and Commissioner of Internal Revenue, or any other person authorized by either of them, "to enter and inspect at any time any mill, cannery, workshop, factory or manufacturing establishment." The law is held to be invalid by the Supreme Court of the United States, in *J. W. Bailey vs. The Drexel Furniture Company*, May 15, 1922. The Court holds that the law regulates business "by the use of the so-called tax as a penalty," and "is imposed to stop the employment of children within the age limits prescribed."

In its decision the court uses this language: "Grant the validity of this law, and all that Congress would need to do, hereafter, in seeking to take over to its control any one of the great number of subjects of public interest, jurisdiction of which the States have never parted with, and which are reserved to them by the Tenth Amendment, would be to enact a detailed measure of complete regulation of the subject and enforce it by a so-called tax upon departures from it. To give such magic to the word tax would be to break down all constitu-

tional limitation of the powers of Congress and completely wipe out the sovereignty of the States.

"The necessary effect of this act is to regulate the hours of labor of children in factories and mines within the states, a purely state authority. The so-called tax is a penalty to coerce people of a State to act as Congress wishes them to act in respect of a matter completely the business of the state government under the Federal Constitution."

Lawyers are, of course, most competent to interpret this decision in relation to the principles of the Capper bill. If it casts a clear doubt upon the constitutional validity of the tax feature of the Capper bill, the sooner that issue is eliminated the better, because the need of forestry legislation is too urgent to admit of fighting over a form of legislation which has little chance of being upheld by the Supreme Court. It would serve to clarify issues in the fight for national forestry legislation if the advocates of the Capper bill would select a committee of five or seven lawyers of national standing to pass upon the constitutionality of the Capper bill in the light of the decision in the *Child Labor Tax Law* and then accept the judgment of these legal authorities.

## GIFFORD PINCHOT, FORESTER-GOVERNOR

GIFFORD PINCHOT'S record as conservationist and administrator is so well known, particularly to the readers of *American Forestry*, that they will appreciate the impetus to conservation signaled by his nomination as the Republican candidate for Governor of Pennsylvania. Unless the unexpected happens, Mr. Pinchot will become the next Governor of Pennsylvania, because of the normal Republican majority in that state.

Mr. Pinchot is so well informed in conservation matters in Pennsylvania, that he is exceptionally well equipped to assume active leadership in them. It was upon the urgent call of Governor William C. Sproul that he accepted the appointment of Commissioner of Forestry on March 10, 1920, in order that forestry in Pennsylvania could be raised to a standard to meet the State's needs. He took hold of the work aggressively, and in two years of service with the Department of Forestry so aroused public interest and accomplished such far-reaching results in forestry, that the impress has been felt throughout the country.

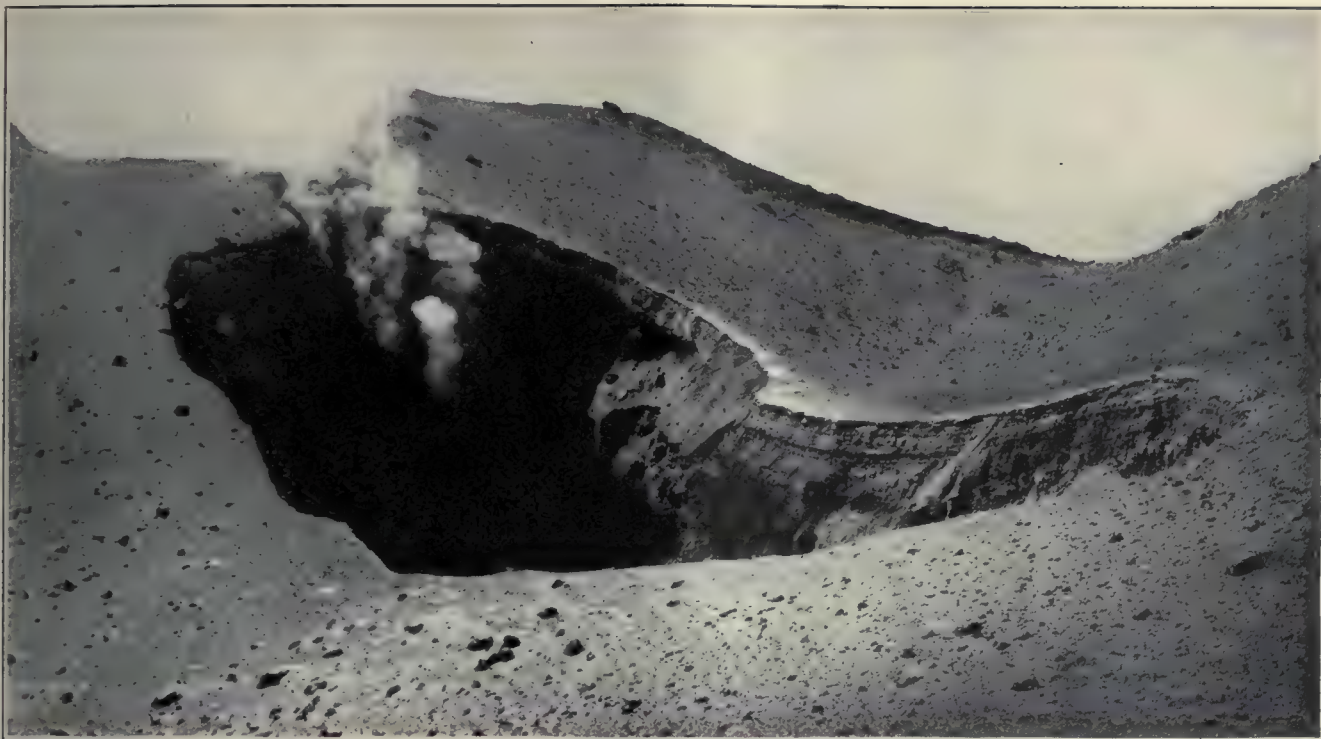
In his enthusiastic and able manner he obtained public interest and support in forest protection and forest practice unparalleled in any state in such a short time. Stressing the vital need of forest protection from fire, he secured an appropriation of \$1,000,000 for forest protection, an unprecedented record for State work, for the

biennial period June 1, 1921 to May 31, 1923. He also secured legislation authorizing a reorganization of the Department of Forestry along highly constructive lines. An important and significant provision of the Act is that the Commissioner of Forestry and his Deputy, and the heads of bureaus and offices handling technical forest work, must be men of technical training and experience in forestry.

The Pennsylvania Department of Forestry made wonderful progress under Mr. Pinchot's administration which was marked by efficient conduct of business, intelligent leadership, close cooperation with the public, and the spirit of public service. There was no drastic overturn in personnel in the accomplishment of it. Each member of the Department was put to the task for which he was best fitted, and a fine *esprit de corps* developed. A standard of public service was thus created in the Pennsylvania service of the type which has characterized the United States Forest Service since its inception.

In the larger field now open to him, Mr. Pinchot will demonstrate without question the high standards of efficiency, conduct and accomplishment which have marked his entire career. He is amply fitted by training and experience in public service to meet the problems of the Keystone State.





Photograph copyrighted by P. J. Thompson

#### CRATER ON LASSEN PEAK

Lassen Volcanic National Park, California. Here alone within the borders of the United States may be seen and studied the phenomena of volcanic activity.

## YOUR NATIONAL PARKS

By A. E. Demaray

Editor, National Park Service

**T**HE National Parks, set aside by Acts of Congress because of extraordinary scenic beauty, remarkable phenomena or other unusual qualification for "the benefit and enjoyment of the people," are truly the playgrounds of the American people. And it is the policy of the National Park Service of the Department of the Interior, which is the Government Bureau having control of the National Parks, to permit their general use by the public in the manner that best satisfies the individual taste. To that end mountain climbing, horseback riding, hiking trips, motoring, camping, swimming, boating and fishing are actively encouraged. Hotels and permanent camps are available giving a choice of accommodations at rates which are strictly regulated. Excellent roads for motoring, choice camp sites for camping and alluring trails for hiking among scenes of inspiring beauty are awaiting the visitor.

Have you seen God in His splendors,

Heard the text that Nature renders?

(You'll never hear it in the family pew)

The simple things, the true things, the silent men to do things,

Then listen to the Wild; it's calling you.

At the request of AMERICAN FORESTRY a number of Park Superintendents have been asked to tell of their Park's attractions, and their messages to you follow on succeeding pages.

There are in addition to those described nine other National Parks and it is the purpose of this article to tell briefly of these.

The Hawaii National Park, Territory of Hawaii, includes the summits of three volcanoes of world celebrity—Haleakala on the Island of Maui, and Mauna Loa and Kilauea on the Island of Hawaii. Of the three areas the Kilauea section is the most accessible, being reached directly by automobile from Hilo, the second city of the Territory. The lake of churning fiery lava within the crater of Kilauea forms one of the most spectacular exhibits in the world. The Park is open all the year.

The Mount McKinley National Park, Alaska, is the second largest National Park, containing in its 2,645 square miles the most sensational section of the great Alaska range culminating in Mount McKinley, altitude 20,300 feet, the highest peak in North America. Congress created this National Park, principally to protect its wild herds of caribou, moose and mountain sheep,



The park area is the fountainhead of the game supply of this part of Alaska. The newly completed Government Alaska Railroad closely approaches the northeast corner of the park. McKinley Station is the point of entrance, but travel into the park as yet is only for the most hardy traveler, as there are no roads or accommodations.

The Hot Springs reservation in the Ozark Mountains of Arkansas is really the oldest National Park in one sense, having been reserved in 1832, 40 years before the wonders of the Yellowstone first inspired Congress with the idea that scenery was a national asset deserving of

Lassen Volcanic National Park, California, offers in Lassen Peak, altitude 10,465 feet, the only active volcano in the United States. While its last violent eruption occurred May 22, 1915, steaming mud pots may be observed in its crater. The climb of the cindery summit trail is more than rewarded by the superb view to be obtained. In the far distance Mount Shasta rears its snow-crowned head; occasionally Mount Hood in Oregon may be seen. Within the Park camp accommodations are to be had at Drakesbad reached by road from Chester which in turn is reached from Paxton, California, on the Western Pacific Railroad and from Red Bluff on the Southern Pacific



THE KILAUEA LAKE OF FIRE

Photograph copyrighted by E. M. Newman

One of the most spectacular exhibits in the world is this crater in Hawaii, now visited by many tourists. Photographed at night by the light of its flaming lavas.

preservation for the use and enjoyment of succeeding generations. The City of Hot Springs bordering the park is visited annually by thousands of persons seeking health from the beneficent waters of the hot springs and pleasure in the high and beautiful country with its excellent drives and woodland paths, its mountain and river views, and its exceptional golf. The park is readily accessible by train and by automobile and is open the year around.

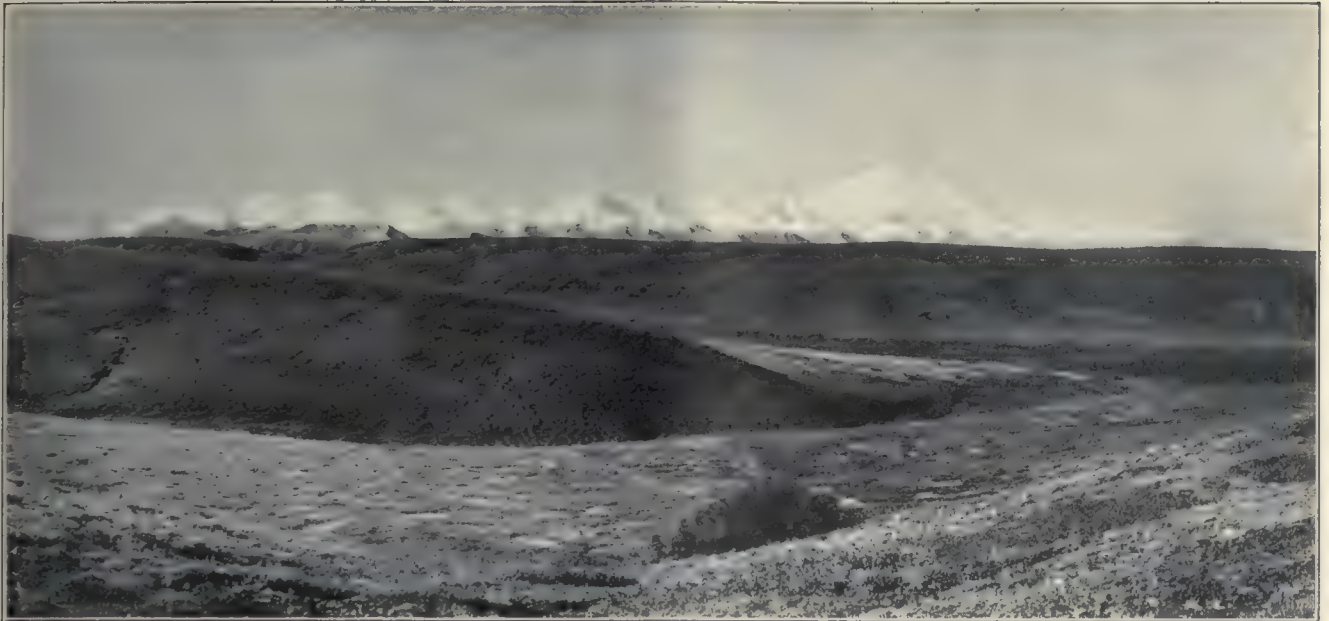
Our newest National Park, Zion, in southwest Utah has for its principal exhibit a deep canyon between sandstone cliffs of great height and vivid color. It is reached from either Salt Lake City or Los Angeles, train tourists leaving the railroad at Lund, Utah, for the 100-mile auto drive to the park. From Zion other notable scenic exhibits of this section can be visited including Bryce Canyon and Cedar Breaks and a trip may be extended to the north rim of the Grand Canyon National Park in Arizona.

Railroad. The Park season is from June 15 to September 1.

Wind Cave National Park, South Dakota, in the Black Hills not far from one of Custer's famous battle fields, exhibits a remarkable limestone cavern. The Park has a surface area of 16 square miles a part of which is maintained as a National Game Preserve for bison, elk and antelope. The Park is best reached from Hot Springs, South Dakota, on the Chicago, Burlington and Quincy and the Chicago and Northwestern Railroads. While the Park is open all the year, the tourist season is from June 1 to September 30.

Platt National Park in southern Oklahoma contains sulphur and other health-giving springs, hot and cold, which gush plentifully from its area of 1½ square miles. It lies in a high country of great beauty and delightful climate and is locally extremely popular. Its entrance point is Sulphur, Oklahoma, which is reached by several





Photograph by courtesy of U. S. Geological Survey  
MOUNT MCKINLEY, ALTITUDE 20,300 FEET

Mount McKinley rises higher above its surrounding country than any other mountain in the world and offers untold opportunities to the daring mountain climber.

railroads and by a number of good automobile roads.

Sullys Hill National Park, North Dakota, is a Park of picturesque forested hills bordering a lake. It is a

wild animal preserve and has historic associations. It is on the main line of the Great Northern Railroad and is accessible during the summer.

## LAFAYETTE NATIONAL PARK

By George B. Dorr, Superintendent

**L**AFAYETTE National Park is the single eastern representative of our National Park System. It is also the only National Park that borders on the sea and includes ocean waters on a harbored coast among its recreational resources.

With many of us, sprung from sea-faring ancestry, the call of the sea is in the blood and it is to the sea we turn for our completest holiday.

One of the greatest recreational assets of the Nation is the New England coast. The health and happiness it brings each summer to an unnumbered multitude are vital elements in our national well-being and of infinite value. Every year that multitude increases, as towns and cities grow and transportation becomes easier.

The coast is limited, and its western portion, from New York to Portland, is already crowded in the summer period. Its eastern portion, from Portland to the Canadian boundary and the Maritime Provinces, is wilder, more picturesque, and of far greater actual length, owing to the way in which the sea penetrates it in great arms and reaches.

At its center from Penobscot Bay to Frenchman's Bay, the two most beautiful sheets of water on our eastern shore, there is an archipelago of islands and rocky islets, great and small, and the greatest of these, domi-

nating the coast for forty miles with its mountainous uplift, is the Island of Mount Desert, whereon the National Park is placed.

Discovered by Champlain in 1604, Mount Desert Island belonged for a century to the Crown of France as a portion of Acadia; then passed to England by the right of conquest and presently to Massachusetts, the Province first and then the Commonwealth, of which Maine was a part until a century ago. Settled by lumbermen and fishermen, resort to it began in the middle of last century, when the establishment of the Boston and Bangor steamship line first gave access to it. On it, alone on our Atlantic coast, mountains meet the sea, fronting it in a splendid, baretopped granite range—Champlain's Monts deserts—that was a noted landmark to mariners in old sailing days.

Lakes lie among the mountains, deep and clear and forested to the water's edge; and at the Island's midst the range is penetrated by a glacial fiord—Somes Sound—whose passage through the mountains is magnificent.

These mountains form the nucleus of the National Park. Two hundred miles of trails lead over them, marked with cairns, affording views of land and ocean to a far horizon that for sheer beauty and inspiring quality are in their kind without an equal.





LAFAYETTE NATIONAL PARK, MAINE

Stepping stones across the outflow from the Tarn, an ice-eroded lake basin at the foot of Champlain Mountain in the most eastern of our National Parks.

The National Park Office is at Bar Harbor, on the shore of Frenchman's Bay. A dozen miles away, a steel and concrete drawbridge, lately built, connects the Island at the Narrows with the mainland and State highway system, over which two principal routes are marked for motorists from Portland to Bar Harbor and the National Park—the one along the coast, with its old seaport towns; the other, by the Kennebec and the State Capital at Augusta.

Coming by rail, the journey ends in a swift ferry to Bar Harbor across Frenchman's Bay, facing the mountains and protected by a range of rocky islets from the open sea—in favorable weather a superb approach.

Mount Desert and its resorts have long been famous, and the travel to them Nation-wide; Lafayette National Park, a gift to the Nation for the people's benefit, is still in its beginning, but it is rich in beauty by the gift of Nature and rich in opportunity for the future.

## YELLOWSTONE NATIONAL PARK

By Horace M. Albright, Superintendent

**T**HIS is Yellowstone National Park's Golden Anniversary year. Fifty years ago, March 1st, it was established by Congress "for the benefit and enjoyment of the people." A pioneer Montanan, Judge Cornelius Hedges, in seeking a way to preserve the wonders and beauties of the Yellowstone region, gave to the nations of the Earth the National Park idea, and today the idea is a conservation principle of first importance

in many countries. Thus, Yellowstone Park in 1922, as it celebrates its semi-centennial anniversary, deserves to have the intelligent and progressive people of the world consider in their moments of reflection on civic affairs, what this great playground, and the altruistic idea upon which it is founded, means to them and to posterity.

There will be tens of thousands of visitors to Yel-



Yellowstone National Park this year, coming by rail or by automobile, planning to use their own equipment and camp out in the forests, or to tarry a while at the hotels or permanent camps. Never has the great Park been better prepared to receive its friends. Its three hundred miles of road are in excellent condition, there are more and better trails than ever before—a thousand miles of them, the public camp grounds have been extensively improved, the permanent camps have largely augmented their facilities, and likewise the hotels are equipped to accommodate more guests than at any time in the past. Railroad rates are very reasonable this year.

Plan a horseback tour of the Yellowstone and see the wild life at close range, the buffalo, elk, deer, antelope, moose and beaver; go into the recently explored "Cascade Corner" of the Park, or to Grasshopper Glacier where millions of grasshoppers of ancient species lie imbedded in a body of ice of enormous proportions; or ride to the moose country at the headwaters of the Yellowstone. Saddle horses and guides are available in the Park or at nearby "dude ranches."

For the fisherman, the Yellowstone offers great sport. Here the native cutthroat trout abounds, also the native grayling, but Brook, Rainbow, Loch Leven, Mackinaw and other trouts planted in Yellowstone waters also furnish snappy recreation for the angler.

From the standpoint of opportunities to study Nature's handiwork, the Yellowstone has no equal or close competitor. Geysers, hot spring terraces, the Grand Canyon, petrified forests, lakes, rivers, waterfalls, unbroken forest wilderness, wild animals, 202 varieties of birds, exquisite wild flower displays, glaciated valleys and lava flows, are all easily accessible. Here Nature is still working vigorously while exhibiting a wide range of wonderful achievements. The Park has a museum, a lecturer on its history and natural features, and nature guides to explain in popular language the meaning of the phenomena that are to be observed on every hand.

Whether one visits Yellowstone National Park to find seclusion in the fastness of our last great wilderness, or to ride horseback over its thrilling trails, or to study



Photograph copyrighted by Haynes, St. Paul

#### HORSEBACK PARTY IN THE HOODOOS, NEAR MAMMOTH HOT SPRINGS

A horseback tour of the Yellowstone National Park, with its high, dry, pine-laden air will pay big dividends in improved health, appetite and sleep. The mecca of many summer excursionists.



its exhibits of natural history, or to fish its crystal clear waters, or to motor over its scenic roads, or simply to rest in the peaceful atmosphere of the high mountains,

he may be sure that in our oldest and largest Park he may find all that he has hoped for, and more thrown in for good measure.



TERRACE AT MAMMOTH HOT SPRINGS

Beautiful yet fantastic terrace built up by deposits of lime from the marvelously colored hot springs at this point. One of the most novel scenic effects in the world.

## YOSEMITE NATIONAL PARK

By W. B. Lewis, Superintendent

**Y**OSEMITE Valley is familiar to most citizens of the United States at least by picture if not by personal visit. Never a month passes but that one sees in several magazines photographs of El Capitan or Half Dome, and Vernal, Nevada and Yosemite Falls are as well known to Easterners as to native Californians. Yosemite Valley, however, is but a small part of Yosemite National Park.

With the passing of the stage coach has come the influx of hordes of visitors, and the Valley has lost much of its former romantic and dreamy atmosphere. A few lovers of the Old Yosemite deplore the so-called "popularization" of the Valley—the admission of automobiles. The opening of roads to privately owned machines merely means that thousands are enjoying Yosemite who could not have done so under the old conditions and that the frontier has moved farther back.

Leave the Floor of Yosemite Valley and you are in the wilderness; there are a thousand square miles of wild High Sierra country in the Park. It is this virgin highland region, much of it almost unexplored, that is now calling hundreds of the more adventuresome tourists to the trails of the back country.

There are many ways of seeing the High Sierra, some of them costly but with all the comforts one could desire and others requiring more physical exertion but less of a money outlay than for an equal period at home. A recently developed and most convenient means of seeing the upper regions is for one to make his headquarters at the chalets or lodges that are maintained in the heart of the mountains. These are but one or two days by foot or horseback from Yosemite Valley and serve as excellent bases from which to explore the neighboring regions. But by camping out one is free to roam the trails of the Big Country at will, stopping as his fancy wills beside a trout stream or climbing to sandy timberline benches on glacier-polished heights. A camping outfit, guide, packers, cook, and pack animals may be hired in Yosemite for trips to any part of the Park. This offers the maximum degree of comfort and the minimum of worry and responsibility; for the majority of visitors, however, it is too expensive.

The trails of the Park are becoming so well marked that a guide and packer are not necessary, and even the most inexperienced of mountaineers need have no fear of pioneering in the back country.





CATHEDRAL PEAK

Photograph by Ansel E. Adams

Where the sunrise trail crosses the divide it passes one of the many fine fishing lakes in Yosemite National Park and fishing is one of the attractions to many of the visitors.

Hundreds of persons are now climbing eastward to peaks and canyons that were known but a few years ago only to members of the Sierra Club and a few other mountaineers. It is gratifying to the few of us who administer this vast playground of the people to ride through the High Sierra and find how many persons

have discovered the charm of "The Home of the Red Gods." Some of them are knapsacking; others walking beside the burro or mule that bears their burdens; many riding and leading a pack train; and a few following packers and guides with all the appurtenances of a "dude" outfit. All are happy.

## GRAND CANYON NATIONAL PARK

By W. W. Crosby, Superintendent

**E**VERY American, at least, should make as soon after maturity as possible, for his benefit as a citizen and as an individual, two pilgrimages—one to Washington's home at Mount Vernon, Virginia, and the other to the Grand Canyon of Arizona. Sentimental journeys they must be; the first to the place most closely associated with our Nation's greatest hero; the second to Nature's greatest wonder.

Grand Canyon National Park is not a "playground" in the same sense that the term is applied to many other Parks. There are ample facilities for amusement or recreation, but the Canyon belittles them all.

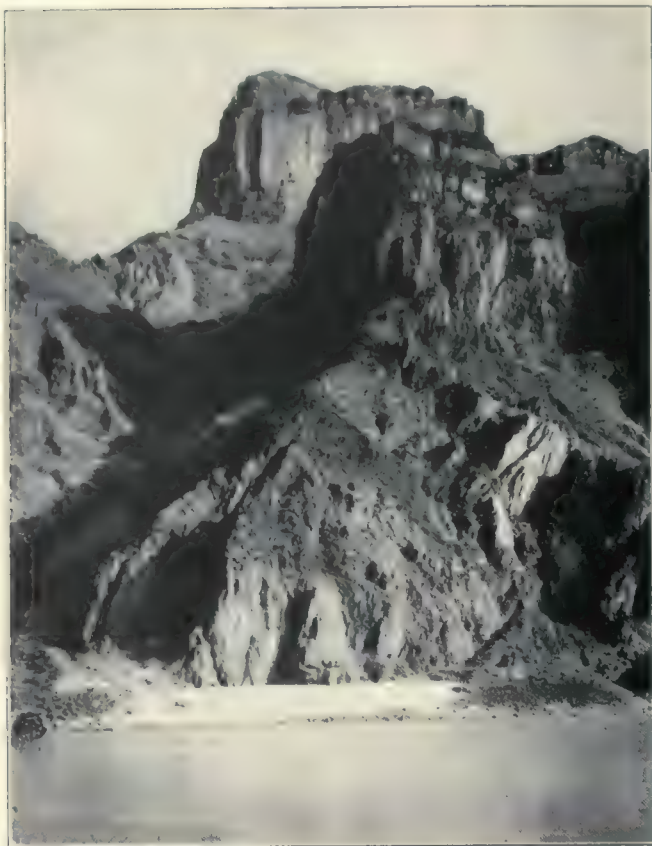
Its infinite magnitude, majesty, coloration, and fascination, so affect its visitors that indelible impressions are left in the minds of all as to the incomparability of the Canyon with any other natural or artificial wonders of the world.

Several other localities have their wonder-units of scenery. The catastrophe of the destruction of any one of them would be mitigated by the fact that there still would remain elsewhere similar scenery, though one might have to journey farther to see it. But to lose the Grand Canyon would mean the annihilation of something that can not be found elsewhere on earth.

To every visitor it is something different from anything else, something unheard, unread and unimagined. Even the single experience of watching from the rim the immense kaleidoscope presented daily in the rays of the sun on his journey over and along the length of it—to say nothing of the motor trips along the rim roads or the muleback trips down into its depths—leaves impressions which will be carried in the mind through all other experiences of life-time.

The Grand Canyon is an ideal place for the intelli-





Photograph copyrighted by Fred Harvey Company  
ACROSS THE COLORADO RIVER IN THE GRANITE  
GORGE

View taken from the mouth of Bright Angel Creek near where is located the new Phantom Ranch. At the lower end of the left-hand gully, in the shadow, may be seen the trail beginning to zigzag its way up to the Tonto Plateau, 1,500 feet above the river.

gent person to spend a vacation. The trails are always open, and, even when the snow does lie on the rim, some motor trips may be made for the views. Foot, saddle-horse, and muleback trips into the Canyon always offer the enjoyment of glorious scenery, inspiring surroundings, and novel situations under comfortable circumstances.

The climate as a whole is unexcelled. In the winter there are but few days when it is disagreeable to be outdoors even on the rim. If necessary, by shifting one's abiding place (from the rim to the unique Fred Harvey Ranch at the mouth of Bright Angel Creek down in the river gorge—4,500 feet lower than the rim—for instance) one can bask in the sunshine (of Palm Beach or of Coronado) and contemplate in comfort the snows

of Quebec above. In midsummer the temperature on the rim seldom exceeds 85 degrees F. The moisture content of the air is so low that the "sensible" temperature seems much less than this figure among the big pines, the cedars, and pinons which cover the rim.

The Grand Canyon National Park is in the heart of our southwest wonderland. The reservations of a "Vanishing Race" the Hopi, Supai, Navajo and other Indian tribes may be visited from it. "Cliff Dwellers" ruins are



Photograph copyrighted by Fred Harvey Company  
HAVASU FALLS IN THE CANYON OF THAT NAME

It drops over a background wall plastered with dark red travertine festoons and is one of the most picturesque waterfalls in the parks. Havasu is the Indian name for Sky Blue Waters.

found in the Park itself and the ancient pictographs of a forgotten race, in and nearby the Park, await translation. The Petrified Forest National Monument may be easily reached from here by automobile and by train.

There is, in Grand Canyon National Park, at least one natural invitation for every American to visit it. For a multitude there are several forms of this invitation.

## GLACIER NATIONAL PARK

By J. R. Eakin, Superintendent

**G**LACIER National Park, with its 60 glaciers, 250 lakes and hundreds of waterfalls, serrated peaks and sheer precipices, contains the noblest mountain scenery in America. Here one may ride in an automo-

bile, a launch, ride horseback and visit a glacier all in one day and never be more than a few miles from a modern luxurious hotel. Or one may climb to the very crest of the Continental Divide and spend the night at a com-



fortable chalet, amidst scenery that beggars description, and view a sunrise and sunset that only Nature could paint.

Glacier's maximum north and south dimension is about 50 miles and its maximum east and west dimension is about 40 miles. Within the boundary of the park is located the intersection of the north and south and east and west continental divides. At the junction of these divides is Triple Divide Peak and from its summit one can toss a pebble into streams flowing into the Hudson Bay, the Gulf of Mexico and into the Pacific Ocean. This is a distinction that no other section of North America can claim.

It is doubtful if any other area contains so much of interest to scientists and naturalists. Due to the Lewis Overthrust, incredible as it may seem, in many localities the younger rocks are found on top, in the reverse order that Nature formed them. Glacier National Park is the one place where the flowers of the Pacific Coast, the Alaska Region, the Northern Plains and the Rocky Mountain Region meet. Another feature that lends variety is the contrast between the relative humidity of the west slopes of the Continental Divide and the aridity of the east slopes. Consequently, no other area has such a great variety of flowers, trees and shrubs.

Several of the National Parks attract more visitors annually than Glacier, yet if actual tourist days were considered Glacier would rank with the leaders. Its

charm is proven by the thousands who return year after year for visits of increasing length.

More saddle horses are used at Glacier than all other Parks combined. The road system is at present undeveloped though most points of interest in the valleys can be reached by automobile, and good camping grounds are provided. The Trans-mountain Road now under construction, when completed, will be by far the most scenic highway in America, if not in the world. The trail system comprises 669 miles, of which 371 miles are classed as tourist trails, the remainder being boundary and fire trails. Tourist trails cross the Continental Divide in five places. In addition, seven other divides, practically as high and as interesting are crossed.

Signs are distributed along tourist trails in such a manner that pedestrians cannot get lost. It is believed that no other section of the country contains such interest for rugged hikers. Walking tours of the Park are rapidly increasing in popularity.

Through an arrangement with the University of Montana the Free Nature Guide Service conducts short daily walks, during which flowers, trees, animals and other things of interest are pointed out and explained, and popular talks will be given in the evenings at principal tourist centers on the flora, fauna and geology of the Park.

Fishing is excellent and visitors should bring fishing tackle. The principal varieties of fish are Cutthroat, Dolly Varden, Rainbow and Eastern Brook Trout.



AFTER THE STORM

Photograph by R. E. Marble

Lake McDonald on the west side of the Continental Divide is Glacier's largest lake. Nine and one-half miles long by a mile wide it is fringed with magnificent forests.





LAKE McDONALD, GLACIER NATIONAL PARK

Photograph by R. E. Marble

The new Transmountain Highway will cross the Continental Divide through Logan Pass to connect Glacier's east and west side road systems. The section along the east shore of Lake McDonald is open to automobile travel.

## MESA VERDE NATIONAL PARK

By Jesse L. Nusbaum, Superintendent

**A** MERICAN tourists by the hundred thousand yearly spend millions of dollars in visiting foreign lands and viewing the achievements of civilizations long since past or decadent, a few thousand only are sufficiently interested in their own pre-Columbian America to investigate the archaeological wonderland of the Southwest.



FAR VIEW HOUSE

Photograph by George L. Beam

This mesa pueblo, one of the Mummy Lake group of ruins, was excavated in 1916 by Dr. J. Walter Fewkes, chief of the bureau of American Ethnology. Dr. Fewkes' campfire talks in the park are looked forward to each year by visitors.



Mesa Verde (Green table or table-land, named from the dense forest of pinyon and juniper cedar covering it) was made a National Park in 1906, in order that the finest, largest and best-preserved cliff-dwellings in this country, if not in the world, "might be protected and preserved for the enlightenment and education of the present and future generations,"

This great detached table-land, rising boldly and abruptly from one thousand to twenty-five hundred feet above the valleys surrounding it, and, undoubtedly, commanding the greatest expanse of mountain, valley, plain and desert country to be seen from any accessible point in the Southwest, was further protected by many deep, narrow, parallel canyons heading at the north rim, and separated by small tongue-like mesas.

iously arranged under the protecting roof of the cave, that it means that not a single foot of usable space was wasted, and so well constructed by the cliff-dweller masons that structures of four stories in height still remain nearly intact. Deserted centuries ago, for what reason no one can say, they stand today the finest examples extant of primitive architecture in this country.

Far View House, the only excavated unit in the Mummy Lake group of sixteen great mounds, occupying level ground on the Chapin Mesa, presents a totally different or "unit type of pueblo construction," large living rooms surrounded by the kivas, and forming a compact, rectangular shaped building.

This is a later development of the cliff-dwelling culture, whereas Earth Lodge A, a pit dwelling of a semi-subterranean type, near Square Tower House, shows



Photograph by George L. Beam

This ruin, excavated in 1920, was devoted to fire worship by the cliff dwellers. It is a connecting link between the people of the mystic past and the present. Dr. Fewkes is the figure in the photograph.

Great caves in the vertical side-walls of the smaller canyons offered a maximum of natural protection, both from enemies and the elements, and ideal home-sites and storage spaces adjacent to the rich, red soil of the mesas above, to these peaceful, home-loving agriculturists.

Because of their thrift and foresight in storing away corn and other vegetable products to carry them over years of periodic drought and crop failure, they were constantly subject to raids of the non-agriculturist Indians, who depended largely upon game for subsistence. The many ruins and circular watch-towers, which dot the mesa at points of vantage, indicate the seriousness of these raids.

Cliff and cave ruins are found, literally, by the hundred within the Park area, ranging from the small one-room, apparently inaccessible ruins to a great communal development as represented by Cliff Palace with over two hundred secular rooms and twenty-three circular, subterranean kivas, or ceremonial rooms, so ingen-

the earliest type of home so far found on Mesa Verde. In every direction, over the mesa top, mounds, indicating either great settlements or isolated rooms, are found, awaiting the investigation of scientific men, who alone are permitted to conduct excavations, and then only for the benefit of reputable museums or scientific societies. The wanton destruction of archaeological sites, at the hands of the commercial pot-hunter, is now a thing of the past.

Protective measures are intimately associated with the problem of excavation in this Park in order that exposed ruins may last indefinitely, and to Dr. J. Walter Fewkes, Chief of the Bureau of American Ethnology, of the Smithsonian Institution, under whom all the work has been accomplished with the single exception of Balcony House (the work of the author), belongs the credit of making Mesa Verde live again in the light of the past. His evening camp-fire talks explain the problems of the day.



# THE SEQUOIA NATIONAL PARK

By John R. White, Superintendent

**S**TUDENTS of any subject are always intensely interested in the finest examples to be found in their particular line of work. The architect dreams of the day when he can see the Parthenon or the Taj Mahal; the volcano-

It is conceded by dendrologists and travelers that the forests of this Park surpass any other of their kind in the size and beauty of trees and in the number of species represented. As well as the Big Trees, almost limitless in number, size and age, there are not less than 10 species of pine, two of true firs, the cedar, and the so-called nutmeg, 6 species of oak, 2 each of alder, cherry, maple and dogwood, and many others.

Another feature which commends this Park to the forest lover is the possibility of reaching the Big Trees at any season of the year. Only in the region of the Sequoia National Park is it possible to actually see the



Photograph by George F. Belden  
THE PILLARS OF HERCULES

The Giant Forest, Sequoia National Park, contains in an area of 3,200 acres 5,000 sequoia trees, over 400 of which exceed 10 feet in diameter. The General Sherman Tree, 36.5 feet in diameter, is the largest and oldest living thing in the world.

logist turns his steps toward Vesuvius or Mauna Loa; the lover of waterfalls seeks the Yosemite; the big game hunter goes to East Africa or the Canadian Rockies.

The forester, or even he who merely loves trees, follows therefore a natural instinct when he turns longingly towards the Sequoia National Park for it is there that the mightiest forest in the world has been preserved; it is in that Park that the largest trees in the world are to be found. *Sequoia gigantea* or *Washingtoniana* is best studied at Giant Forest where the Big Tree of California is found not only in many groves but in true forest growth. Elsewhere in California the Big Trees occur in isolated groves as at Calaveras, Mariposa and Tuolumne. But in the Sequoia National Park they are spread over many miles so that the forest lover may wander among them and find mammoth trees rarely if ever visited and may study them "far from the maddening crowd."



Photograph by George F. Belden  
THE "ABE" LINCOLN TREE

Height, 270 feet; diameter, 31 feet. The Sequoia tree is the crowning achievement of the vegetable kingdom in size and majesty and age.



Big Trees from the valley, thousands of feet below them. At Three Rivers one may sit on the porch of a ranch house at an elevation of some 900 feet, surrounded by citrus trees and the flowers of the lowlands, and gaze at the skyline of the Giant Forest plateau, 6000 feet above and 9 or 10 miles air line distant. On that skyline, thrusting their heads above the lesser trees, the sugar pines, the yellow pines and the silver firs may be seen the Mammoth Trees. With a field glass it is even possible from Three Rivers to distinguish individual sequoias on the rim of the plateau between Moro Rock and Hanging Rock.

A new road is now being constructed by the National Park Service up the warm south slopes which lead to the Giant Forest plateau from the Middle Fork of the Kaweah River. When, in about a year's time, this road is completed it will be possible to motor from the valley to the Big Trees at any season of the year. Meanwhile they are accessible by automobile from May to October

by the Giant Forest Road, a mountain road better than the average. And during the winter they may be reached by automobile to Hospital Rock and thence by an 8-mile trail into Giant Forest.

About 30,000 visitors have annually entered the Sequoia National Park during the past two or three years. The number increases each year and this practically without advertising. Each visitor has gone away as a living advertisement to the attractions of this region; to its accessibility; its delightful camping places among the Big Trees and to its excellent fishing in streams and lakes.

But it is, after all, the true lover of trees who here finds complete contentment; who finds in the forests of the Sequoia National Park the supreme examples of nature's architecture and who year after year, in increasing numbers comes to the well named Giant Forest to wonder and compare, to enjoy that uplifting thrill which the Mammoth Trees can give, to turn away with reluctance and to count the days until he may again return.

## CRATER LAKE NATIONAL PARK

By Alex Sparrow, Superintendent

THE principal attraction of this National Park, as its name suggests, is a lake. This may sound disappointing, but Crater Lake has never disappointed. Imagine standing on the edge of a giant bowl six miles in diameter and looking down a thousand feet on a body of water of the deepest Prussian blue and you have gained some conception of Crater Lake.

And when you have actually stood on the rim of its crater and have gazed down into its fascinating depths then if you are not overwhelmed with the sense of your own puny insignificance your journey will have been in vain. But Crater Lake has never failed to exercise its spell.

Congressman Sinnott in describing Crater Lake in the House of Representatives in 1918 said:

*"To the scientists, a mighty volcano collapsed within itself  
Mount Mazama, 15,000 feet high, telescoped.*

*"To the poet, 'the sea of sapphire,' 'the sea of silence,'  
'a lake of mystery.'"*

*"To me, a shell hole of a war of worlds—who knows?"*

*"Could the great blind poet have seen this marvel ere his  
pen had Lucifer and his host of rebel angels—*

*Hurled headlong flaming from the ethereal sky,*

*With hideous ruin and combustion down—in Miltonic imagery here he'd have found the impact."*

Now if you have come this far you are about ready to ask—where is Crater Lake? It is in southern Oregon in the very heart of the Cascade Range at about 7,000 feet above the level of the sea. It is reached by auto stage from either Medford or Klamath Falls, Oregon, stations on the Southern Pacific Railroad. Any ticket agent will tell you how to get here. If you drive the family "Flivver" or a Packard Twin Six the way is just as easy and

the Oregon tourist and Information Bureau, Portland, Oregon, will send you a road map if you will but write.



Photograph copyrighted by Scenic American Company  
BLUEST OF BLUE WATERS, CRATER LAKE, OREGON

There are crater lakes in other lands, but the one lake of its kind in the United States exceeds all others in beauty and in magnificence of setting.



There is comfortable lodge on the rim and free public camp grounds for the camper. An automobile road, 35 miles in length, completely encircles the rim. There is an easy trail to the lakeside and launches for the ride around

the lake. There are rowboats for the fishermen, and that reminds me, don't forget to bring along your rod and tackle for Crater Lake's trout are as gamey as they are delectable.

## MOUNT RAINIER NATIONAL PARK

By W. H. Peters, Superintendent

**M**OUNT Rainier National Park is the greatest single attraction in the Pacific Northwest. The principal features that entitle Rainier to its place of distinction are its virgin forests, its variety of beautiful wild

and 6 miles long and vie in magnitude and in splendor with the most boasted glaciers of the Alps. Cascading from the summit in all directions, they radiate like the arms of a giant octopus.



A HUMAN TOBOGGAN

Photograph by Frank Jacobs

"Nature sliding" on the snow slopes below the glaciers in Paradise Valley. Winter sports in the summer may be indulged in by the visitor to Mount Rainier National Park.

flowers, its mighty system of glaciers, and last but not least the mountain itself. This massive peak after which the Park is named looms 14,408 feet above sea level and 10,000 feet above its immediate base. The total area of its glaciers amounts to no less than 48 square miles, comprising 28 glaciers, many of which are between 4

The National Park is a place of diversified attractions. One can come prepared to stay a day, a week, or a month, and find new interest for every day. Situated only 56 and 96 miles, respectively, from Tacoma and Seattle, it can readily be reached in a few hours by automobile or train. One can breakfast in Seattle or



Tacoma and lunch among the flowers and glaciers in the Park.

At Longmire Springs the visitor gets his first real "close-up" of Washington's wonderous inheritance—Mount Rainier. Snow-clad, gleaming bright, and over-looking like a mighty monarch of ancient Rome, all the dark heavily forested hills and valleys surrounding it, it is to the beholder an awe-inspiring spectacle. One never tires looking at it. But whenever the eye chanches to stray from its mighty snow and ice-covered dome there may be seen other attractions in and around Longmire Springs, the first stopping place in the Park. Here the comfortable National Park Inn is located. The hotel and camp accommodations are strictly modern, efficient, and conducive to the comfort and enjoyment of the visitor. Each year added improvements make Longmire Springs more desirable as a place to stay rather than just a stop-over. From here radiate several of the trails and footpaths to the many interesting sections of the Park on the southwest side of the mountain. Directly in front of National Park Inn is a large open area, grass covered, and containing many interesting and health-

giving mineral springs, chief among them being sulphur, iron and soda.

Leaving Longmire Springs the visitor starts on the final lap of his journey to Paradise Valley, which is nestled at the foot of the great mountain, surrounded on all sides by precipitous peaks. The highway to Paradise is unsurpassed in beauty and thrills, for on this stretch of the road the traveler ascends from an altitude of 2,761 feet to 5,557 feet. At the journey's end (for everybody goes to Paradise Valley) a beautiful scene is presented. Here, standing on the lovely veranda of the homelike Paradise Inn, one can see in every direction myriads of gorgeous mountain flowers, in every hue and color. And the flowers grow to the very edges of the mountain's glaciers.

Paradise Inn is the starting point for the strenuous Summit Climb and the delightful Sky Line Trail saddle horse trip. Skiing, tobogganing, and various other snow sports are indulged in in Paradise Valley all summer long. In short everything to contribute to an exceedingly interesting, health-giving and wonder-filled trip is to be found in Rainier National Park.

## THE HEART OF THE ROCKIES

By Roger W. Toll

Superintendent, Rocky Mountain National Park

**T**HE Rocky Mountain National Park was created in 1915, and includes within its boundary lines a region that is typical of the best of Colorado mountain scenery. The park has an area of 397½ square miles, or a quarter of a million acres.

The Park encloses about 29 miles of the Continental Divide and has 46 peaks of an elevation of 11,000 feet or more. The highest of all is Longs Peak, whose elevation is 14,255 feet. More than a thousand people climbed this peak last summer.

Rocky Mountain National Park is 75 miles from Denver, by good automobile roads. There are several approach roads and all of them are scenic though different in character. Because of its accessibility, Rocky Mountain National Park draws many visitors, who come from the central and eastern states to escape the hot weather, and to spend their vacation in healthful and bracing outdoor exercise. One may ride horseback, fish, climb mountains and be as strenuous as possible, or one may rest at any of the thirty hotels in the neighborhood, and play golf or tennis.

During the ice age, great glaciers streamed down the valleys from both sides of the Continental Divide. These glaciers have now disappeared, except for small ice fields at heads of the valleys, but the work that they did in scooping out valleys, building up moraines, and gouging out glacial cirques, is still plainly visible and adds much interest to the landscape.

The Fall River Road has recently been completed between Estes Park and Grand Lake. This crosses the Continental Divide, and reaches an altitude of 11,797 feet above sea level. Part of the road is above timber-



Photograph by Frank W. Byerly  
LAKE HAIYAHA—LONG'S PEAK IN THE DISTANCE

Nestled close under the Continental Divide this beautiful lake is easily reached by hikers from the valley hotels and camps.



line, and offers the visitor a wonderful panorama, with the great plains on the east, and range after range of snow dotted mountains in other directions. The snow lies deep on this road, but is opened as soon as possible after June 15, and the early visitor drives past drifts of snow in places higher than his automobile.

The circle trip from Denver to Estes Park, then over the Fall River Road to Grand Lake, and then recrossing

the Continental Divide at Berthoud Pass, and returning to Denver by way of the Denver Mountain Parks, makes a remarkably fine automobile trip. This trip is 235 miles in length and can be made in two days, but one should allow at least a week for the trip in order to stop for a few days in Estes Park, and again in Grand Lake. This gives time to enjoy the beauties of the park, instead of hurrying past them.

## DR. JOSEPH TRIMBLE ROTHROCK DEAD

**D**R. JOSEPH TRIMBLE ROTHROCK, of Pennsylvania, a vice president of the American Forestry Association and one of the most noted foresters in America, died on June 2, aged 84 years. Dr. Rothrock was known as the "Father of Pennsylvania Forestry." For many years he devoted himself to advocating and practicing forestry in his state and secured many beneficial forestry laws. A short time ago he resigned after many years' service as a member of the Board of Forestry Commissioners. He had served the state in other positions and was considered one of the leaders in botany, not only in the United States, but in Canada and other countries. He wrote many books and magazine articles on botany, having made researches and explorations.

He was educated at Freeland Seminary, Montgomery County, and the University of Pennsylvania, graduating from the Medical Department of the latter institution after his return from service in the Civil War. In the war he served as a member of Company E, Twentieth Cavalry, participating in many battles. He was badly wounded in the battle of Fredericksburg.

After graduating from the University he was made professor of botany in that institution. He had also graduated from the Lawrence Scientific School at Harvard University in 1864. He remained at the University of Pennsylvania until 1868, afterward conducting the North Mountain School of Physical Culture and was lecturer for the American Philosophical Society.

Under the direction of the United States Government he led an expedition to explore British Columbia. He was afterwards appointed botanist of the United States Geological Survey.

He was noted as a big game hunter and made annual trips into the wilds of Canada. On his last trip, last autumn, he killed five deer and a caribou.

Dr. Rothrock was noted as the inventor of pemmican, a food composed of beef and apples which grew in great favor with explorers in the frigid country and was claimed to be a preventive of many diseases, including scurvy, the most fatal ailment facing the Arctic explorer or hunters.

Dr. Rothrock's most known work on botany was "Medical Botany of North America," a work which is considered an authority on many matters. He was a mem-

ber of McCall Post, G. A. R.; Chester County Historical Society, American Philosophical Society, Philadelphia Academy of Natural Sciences, Society of Naturalists of United States, Canada Botanical Society, Academy of Political and Social Science, Pennsylvania Historical Society, National Geographic Society, the Masonic Lodge at McVeytown and the Pennsylvania State Forestry Association.

He was a life member and a vice president of the American Forestry Association. When his death was announced President Charles Lathrop Pack suggested to Governor Sproul, of Pennsylvania, the advisability of the state providing a large memorial forest for Dr. Rothrock, and in reply received the following letter:

"I am pleased to inform you that the State Forest Commission at my request considered at its meeting of June 12 your thoughtful suggestion that Pennsylvania set aside a memorial forest in honor of Dr. Joseph T. Rothrock. After earnest consideration, the Commission decided that the previous designation by it of a State Forest District comprising 474,880 acres of forest land, of which 33,187 acres is State Forest, is as lasting a forest memorial as could well be made to Dr. Rothrock. The Commission desires, however, and in this I fully concur, to do honor to Dr. Rothrock's memory in some substantial way, and it has appointed Col. Henry W. Shoemaker, of the Commission, to suggest the most fitting type of memorial. I might say that Col. Shoemaker is now considering a medallion in the Department of Forestry offices, a bust in the State Forest Academy, and a monument in the public square at McVeytown, the birthplace of Dr. Rothrock.

"Personally, and on behalf of the State Forest Commission, I wish to express my deep appreciation of the interest the American Forestry Association has taken in Dr. Rothrock and his work. Pennsylvania is exceedingly proud of him and his wonderful accomplishments.

"Sincerely yours,

"WM. C. SPROUL."

Dr. Rothrock attended forestry meetings whenever possible and was always an interesting and forceful speaker on forestry. His loss will be deeply regretted by forest conservationists.



# ROADS OF REMEMBRANCE

By G. A. Whipple

THE American Expeditionary Forces received many impressions in Europe unrelated to war. One of the most permanent and important of such impressions was the striking beauty of French highways. Wherever the American doughboy traveled in France, and he traveled extensively by foot, army truck, and freight car, he almost always found the highways lined with trees—trees that adorned the landscape and added a pleasing diversity to the endless kilometers that spread their network over the land. The American brought back the picture of this feature of the French countryside and it will never fade from his mind.

Our soldiers learned that trees mean a great deal to Europeans, to the individual and the commonwealth, to the educated and the illiterate, the rich and the poor alike, that they are held universally in high economic and aesthetic regard by all the people. The Roads of Remembrance movement in this country is to a considerable extent, a reflection of this gratuitous education in the art of landscape improvement, of the American soldier in the world war.

A large proportion of the trees that flank the roads in France have been planted many years and for the most part are in full vigor and beauty of maturity. This system of landscape beautification is systematically maintained. Replacements are supplied from conveniently located nurseries. In some sections, even the crowns of the trees along the highways are artistically trimmed and in all cases the lower branches for a considerable distance up the trunk are cut off and utilized for firewood. This pruning permits a clear view of the surrounding country from every point as the traveler passes along the highway.

The Road of Remembrance as a memorial in this country is an idea well adapted to its purpose because along such roads the A. E. F. lived and worked and suffered the hardships of war. Moreover, the adoption of such an idea is a sincere compliment to the soil our warriors de-

fended, and to America's oldest and most honored friend among nations.

During the past two years there have been endeavors in various parts of the United States to build Roads of Remembrance. The movement received impetus in the West through the advocacy of the Chicago Tribune last year. In Louisiana a tree memorial along the Jefferson Highway is being promoted. Patriotic and civic bodies have given their moral endorsement and have offered material assistance from time to time. The Lincoln Highway Association is considering a trans-continental planting plan and numerous municipalities and civic organizations have made substantial plantings. The

American Forestry Association, under the leadership of Charles Lathrop Pack, started the Roads of Remembrance idea in 1919 and has encouraged it vigorously ever since, with the result that it is now evident that the thought has been so well planted that the coming years will find many of these memorial roads in every section of the country.

Probably the nearest approach to large, constructive and systematic planting has been achieved by the New York State



Photograph by A. R. Shattuck

## TYPE OF ROAD OF REMEMBRANCE

This fine road, shaded by noble poplars, indicates the kind of Road of Remembrance along which trees may be dedicated to the memory of soldiers of a large community. Such plantings are being made in many sections.

College of Forestry at Syracuse University. Prof. Henry R. Francis, landscape engineer and head of the Recreation Department at the college, has surveyed and carefully mapped the main automobile route between Syracuse and Utica. The survey was finished two years ago as part of a contemplated plan to line this main artery of travel between New York and Buffalo with trees.

It would be a great mistake to attempt such an improvement unless it is done properly. According to the best scientific opinion the work involves an accurate study of soil conditions, topography of the country, obstructions, and a due regard for the rights and desires of the owners of property along the route. In fact, it is impossible to put down in black and white any hard and





Photograph by A. R. Shattuck

## CURVES NOT OBSCURED BY TREES

By this style of planting along Roads of Remembrance the view may be kept as clear and open as it is on a stretch of straight highway.

fast rule of treatment that would apply to all these various conditions which will have to be met as they occur.

It was ascertained that on every highway there are many trees already in varying stages of growth and decline that would have to be considered, that some soils would accept one kind of tree and another soil demand a different kind, that telephone wires, curves in the roadway, embankments and swampy sections present their individual problems. Views of striking beauty should by no means be obscured. The question, too, of tree enemies—diseases and destructive insects—require the attention of specialists, as the subject relates to the variety of localities along the route. The Road of Remembrance, therefore, is no simple development that can be called into being by a trick of magic. It will entail time and labor on the part of a competent staff if it receives what it deserves, the best possible treatment.

Practically every organized agency in New York State that would be at all interested in the project is in favor of the Road of Remembrance, if anything can be judged by the letters received from the officials of such agencies. Moreover, the public through the pulpit and the press has voiced its approval. This universal desire to see the Roads of Remembrance become an actuality is due largely

to the following reasons: The first is the increased value that would accrue to property by the planting of trees.

Second—There is a growing conviction in the United States that this nation is old enough to eradicate the traces of primitive crudeness and ugliness emphasized in the appearance of our highways, that it is time our country partook of the same beauty and charm that is so evident along the roads of Europe. We make our homes attractive, but not our highways.

Third—The inspiration to make of this landscape improvement a memorial to the soldiers who responded to the call of the country in the country's hour of need. This really is the moving spirit. The feeling that the unstinted service of our soldiers and their great sacrifice cannot be recalled too frequently and that the expression of gratitude of the people can in no other way be more popularly and handsomely embodied than by establishing these living monuments to sanctify their memory has found lodgment in the hearts of the people.

Last November representatives of the New York State College of Forestry, the State Conservation Commission and the Commissioner of Highways of the State met at Albany and agreed to cooperate in the planting of the Road of Remembrance and this culminated in the



Photograph by A. R. Shattuck

## MEMORIAL ROAD IN FLAT COUNTRY

Only a glance at the scenic effect of this Road of Remembrance is necessary to show how effective such planting can be in a flat, uninteresting farming country.



big forestry meeting at Syracuse in April, as reported in the May number of American Forestry. The prescribed activities of the three departments will permit of the erection of this memorial as long as the Conservation Commission and the New York State College of Forestry can supply trees. The College of Forestry has 10,000 elms in its nursery at Syracuse. These range from four feet to eight feet in height and can be appropriated for this purpose. The planting began near Syracuse on the main road between that city and Utica because of the short haul from the College Tree Nursery and the fact that the perfected plans covered this section.

### YANKEE TREES IN FRANCE

*Republished from San Francisco Chronicle, April 18, 1920.*

(The American Forestry Association has undertaken the planting of native American trees as memorials to our soldiers who are buried on French soil.)

No futile wreaths that fade and die,  
Whose life is but a day,  
Can truly honor those who lie  
So many leagues away;

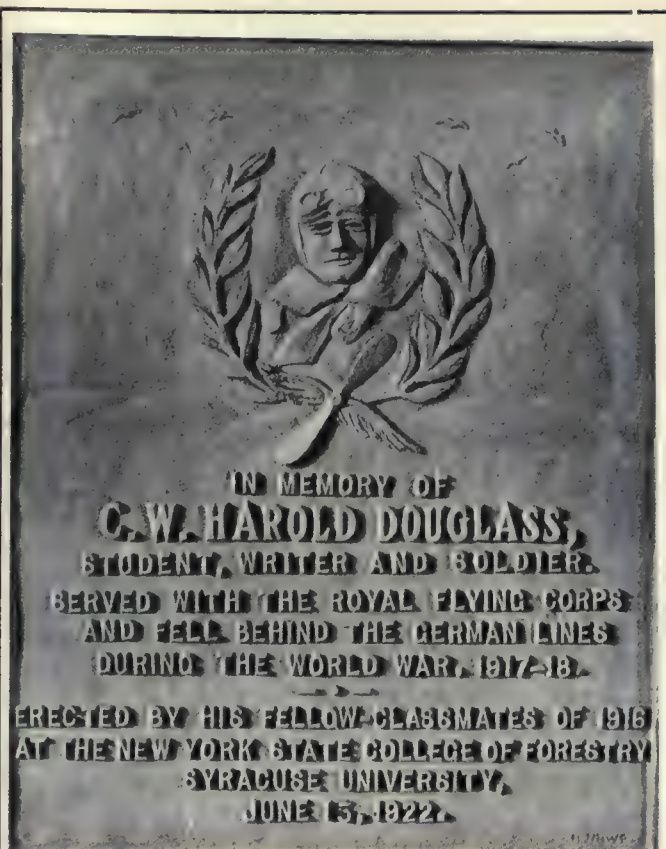
Nor fainting blossoms represent  
The hope, the strength, the urge  
Of Youth incarnate—why, it sent  
Them laughing, to the verge.

For those who perished overseas,  
Our glorious host that lies  
In France, let hosts of living trees  
Gloriously arise.  
Rise where charred limbs of older trees,  
Flung mute against the sky,  
To countless wanton cruelties  
In silence testify.

And at some distant future day  
When we, who mourn them now,  
Because they died—the self same way  
Have followed them, oh how  
Shall we deserve so fine a thing  
For our memorial,  
As trees lit with the green of spring,  
Or scarlet fires of fall?

The movement has gained headway steadily since its inception and the latest indication of this is the fact that Senator Medill McCormick, of Illinois, has sponsored a bill which provides for federal assistance in establishing Roads of Remembrance and which has been made a provision of the Snell Bill.

The Road of Remembrance has had an actual beginning in New York this spring on a large scale. The planting will be pushed as far as possible which means as long as weather conditions and the supply of trees permit. The work will be carried on by competent hands, as befits the splendid purpose to which the trees will be consecrated. In this way the upkeep and replacements will be reduced to a minimum and the health and longevity of the trees will be insured. Prof. Alan F.



### THE DOUGLASS MEMORIAL

This is a reproduction of the memorial tablet erected by the 1916 Alumni Class of the New York State College of Forestry at Syracuse in honor of Lieut. Harold C. W. Douglass, who was killed June 11, 1918, when his plane fell behind the German lines. He was one of the first forestry college graduates to enter the service, joining the aviation corps. His daring and courage as a member of the Royal Flying Corps won the admiration of his British and French comrades. On June 11, 1918, he left his base on a scouting trip over "No man's land." He soared over the German lines while both sides engaged in fierce battle and he never returned. The career and life of this boy who gave his life unflinchingly for his country is well characterized by the tablet, which was designed by Hollis J. Howe, one of his classmates. It has been placed in the rotunda of the College of Forestry at Syracuse.

Arnold represents the Forestry College in cooperating with the Highways Department and the Conservation Commission. The planting when completed in accordance with present plans will be more than 400 miles in length. Some years may be required to plant the entire route between New York and Buffalo, but in the end the Road of Remembrance will become a thing of beauty and a noble monument commemorating the high patriotism that has always distinguished the American citizen-soldier. Such a monument will be particularly fitting because it will be a work of love for those who loved their country more than their life, as the New York Tribune has said, "It was through some tree-lined road in France that every man who played a man's part had to march to keep tryst with his destiny."

There are many beautiful roadways in New England where elms form a canopy over the road, but these are sporadic groups. Massachusetts has planted some of her roads and California boasts of stretches of tree-lined



highways; New York also has many indifferently adorned roads where the so-called shade trees have been planted



A CALIFORNIA WHITE OAK

Trees are a noble and inspiring feature of almost any landscape and the planting of such memorials to our soldier dead is strongly advocated by the American Forestry Association.

along lot fronts, but the extensive planting of trees on both sides of the arteries of vehicular travel is new in this country.



Underwood & Underwood

#### THE PLANTING OF THE GRANT TREE

On the 100th anniversary of his birth, the American Forestry Association planted an elm from the Grant farm near St. Louis near the tomb of General Grant on Riverside Drive. The picture shows (left to right) W. V. Hayden, president of the Grant Memorial Association; Gen. Isadore Isaacs, Deputy Commissioner of the G. A. R.; W. B. Boyce, of the American Legion, and Charles Lathrop Pack, president of the American Forestry Association.



National Photo

#### WASHINGTON'S OFFICIAL MARKER

The tree marker being placed in the public parks of Washington at the direction of Lieut. Col. C. O. Sherrill, who is carrying out the American Forestry Association's suggestion that the capitol of the country be in reality a National Arboretum. Miss Blanche Howlett has long been an enthusiastic advocate of the plan of marking the trees and earnestly urged that it be carried out.

## PLANT ME A TREE

By Mary Alicia Owen

I am Fame.

Withered are my laurels and my bays,  
Faded the glories of my yesterdays,  
Crumbled my arches, my columns down,  
Roofless my temples that the hilltops crown.  
O men, for enduring memory

Plant me a tree.

I am Grief.

Mossy are my marbles mid the weeds,  
Blackened the scroll that for remembrance pleads,  
Sunken the mound that was flower-bedecked.  
If you would save me from this wan neglect,  
Giving a pledge of your constancy,

Plant me a tree.

I am Hope.

Though rooted is existence in the mire,  
My arms yearn heavenward in desire,  
Yearn heavenward and slowly, surely grow.  
Forgotten is the mud that lies below.  
If you can understand the spirit thus kept free,

Plant me a tree.

I am Faith.

Groves were my cathedrals long ago,  
Sunshine and starshine kept them aglow,  
Young trees were altars, old trees the roof.  
Growth and strength, of God's presence were proof.  
Recalling the Presence that there used to be,  
Plant me a tree.



# MEMORIAL DAY--THE NATION'S TREE DAY

**M**EMORIAL DAY has become the national tree day. The nation turns to the memorial trees it has planted and dedicates them on that day of reverence. In the years to come the nation will gather about its memorial trees as about no other memorials. This was shown in York County, Pennsylvania, on Memorial Day, when twenty-five miles of the Lincoln Highway was dedicated as a Road of Remembrance. This stretch of the famous road had been planted on both sides with memorial trees



National Photo

## MRS. HARDING'S TROWEL IN DEMAND

Even now requests are coming in from women's organizations for the tree-planting trowel first used by Mrs. Warren G. Harding at a tree planting by the American Forestry Association. It was again used at the planting of the International Tree at the Pan-American Conference of Women. Since then it has been in many places throughout the country, the first request coming from Iowa from the Federation of Women's Clubs of West Union, Iowa, for fall planting.

from Wrightsville to Abbottstown. The Women's Club did the preliminary work and the trees have been turned over to the care of the Lincoln Highway Memorial and Tribute Tree Association.

The speakers at the unveiling of the tablets were Major R. Y. Stuart, Pennsylvania Commissioner of Forestry, and Charles Lathrop Pack, president of the American Forestry Association. Mr. Pack opened his address by reading a letter to the Women's Club of York from Mrs. Warren G. Harding, a vice president of the Asso-

ciation. This letter follows:

THE WHITE HOUSE

The Women's Club, York, Pa.:

Please allow me to congratulate you on the wonderful work you have brought to conclusion in the dedication on Memorial Day of the Road of Remembrance along the Lincoln Highway. In the planting of twenty-five miles of that famous highway you have erected a memorial that the entire country can enjoy in the years to come. May long life attend the trees you have placed in the care of the Lincoln Highway Memorial and Tribute Tree Association.

Sincerely yours,

FLORENCE KLING HARDING.

Following the invocation by Rev. Samuel H. Bell, chaplain of the American Legion, H. C. Ulmer introduced the speakers. Major Stuart paid glowing tribute to the Road of Remembrance idea and said his department was ready to co-operate with all organizations in the state in memorial tree planting. Mr. Pack told of the nationwide spread of memorial tree planting and how other links of the Lincoln Highway had been planted. In



## ONE OF THE MEMORIAL ROAD MARKERS

Two tablets were placed at either end of the twenty-five mile Road of Remembrance in York County, which was dedicated with impressive ceremonies on May 30, 1922.



conclusion he pointed out how whole communities could be brought together as in no other way by memorial tree planting and said.

"Such dedications as this on Memorial Day bring me to the thought that the Memorial Days of the future will be tree days. I believe that around these trees on future Memorial Days there will be renewed consecration by the people. A greater number of trees will be planted each year and a stronger current tend to make this nation a tree-planting nation. From trees the nation gets its strength. From trees 'that look at God all day and lift their leafy arms to pray' there will come a new life to the Union when the nation comes to know what trees

western terminus of the Road of Remembrance another tablet was unveiled. Here the invocation was said by the Rev. J. H. Nicely, of Hanover. Miss Mildred Elizabeth Lowe unveiled the tablet. The Rev. Abner S. DeChant presented the tablet to the American Legion, Lieut. Neill making the acceptance speech.

For two years the women have been at work on this Road of Remembrance and it is a fine example to the rest of the country of what can be accomplished. Leaders in the movement are Mrs. J. B. Hamme, Mrs. Ralph S. Cannon, Mrs. A. H. Hayward, Mrs. Carlton Hoff. Associated with them in the Tribute Tree Association are H. C. Ulmer, A. B. Farquhar, Mrs. Charles Moul, W. D.



AT THE UNVEILING CEREMONIES AT YORK

Some of those present at the unveiling of the tablet marking York's now famous Road of Remembrance. Right to left: H. C. Ulmer, Mrs. A. H. Hayward, Major R. Y. Stuart, Commissioner of Forestry of Pennsylvania; Mrs. J. B. Hamme, President Lincoln Highway Memorial and Tribute Tree Association; Charles Lathrop Pack, President American Forestry Association; Mrs. Ralph S. Cannon, Hon. A. B. Farquhar, Mrs. James G. Glessner, President Woman's Club of York. It was under the supervision of the club that the Highway was planted. The next man, with the hat off, is Ralph S. Cannon, and the little girl in front of the tablet is Miss Betty Cannon.

mean. Trees, like this highway, are for the people just as was the man for whom the highway is named. May these highways in their windings over the country bind its citizens more closely together and may every Memorial Day find us ready to consecrate them and ourselves anew to the memory of those for whom the trees live.

"Memorial trees are living monuments of memory for they lived gloriously just as did those for whom they are planted."

The Hon. A. B. Farquhar, who heard Lincoln make the famous Gettysburg address, recited that speech. At the

Broughe, R. S. Cannon, J. C. Schmidt, Robert McPherson, Samuel Small, Jr., while at Hanover the Women's Club, under the direction of Mrs. T. J. Little, Mrs. Emma Shirk and Miss Bertha Zeibel, greatly aided the project. York County is one of the pioneers in memorial tree planting on such a scale. More and more Memorial Day comes to be the nation's tree day. In Washington the American Legion dedicated anew the Memorial Avenue on Sixteenth street reaching to Walter Reed Hospital. From every section of the country come reports of memorial tree dedications and new plantings.

## THE MEMORIAL TREE

The living monument is Light,  
True emblem of our Liberty;  
'Tis Faith and Hope and Charity;  
'Tis ever Youth, gay, strong and bright;  
'Tis heartbeats, Death's decree despite;  
O'er Death it is a Victory;  
The life of man is called a tree

In Holy Writ; and when its flight  
A soul has taken to its rest,  
And when a form is but a clod,  
That monumental tree is best  
Whose great limbs shower on the sod  
Its fruit, as would good deeds attest,  
To feed the little lambs of God.

—Marta Scott Conser.



# THE "FOREST OF STATES"

BY L. G. McDOWELL

It is in the west apparently that people give the greatest attention to the beautification of their private and public grounds and highways through the planting of trees. Perhaps the reason for this is found in the admirable adaptation of the soil and climatic conditions to their growth. Another reason may be in the awakening of the public conscience to the appalling waste in that section through forest fires and extravagant lumbering methods. "Interesting people in shade trees is one of the

Union, but all our colonial possessions as well have been asked to contribute. Enthusiastic co-operation from these have been shown from the first, it being deemed particularly appropriate that Los Angeles should thus pay tribute to all the states in the Union, since 96% of its population is made up of residents formerly living in states other than California. There are numerous state societies and organizations in the city and it is fitting that through this movement it should be made possible



PLANTING THE MICHIGAN PINE IN THE "FOREST OF STATES"

This was the first tree dedicated in the Los Angeles Grove of State Trees, at Exposition Park, March 5, 1921. Left to right: W. M. Bowen, President of Park Board; Mrs. Martha N. McCann, Member of Park Board; W. E. Tipton, President South Dakota State Society; Frank H. True, President Federated State Societies; Sam Young, President Michigan State Society; G. F. Amberger, Treasurer Canadian Maple Leaf Club, and George E. Platt.

first steps toward making them receptive to tree conservation."

This is one of the ideas Los Angeles had in mind when it launched its unique "Forest of States" project. Through its Chamber of Commerce, in co-operation with the City Park Commission, it is planting a grove in Exposition Park to be known as the "Forest of States." To this grove not only every state in the

for these societies to meet in future days under the beneficent shade of trees from their "home states." Beside this sentiment attached to the "Forest," it will offer wide educational possibilities, since, due to climatic conditions in Southern California, trees from all states will flourish in the Los Angeles grove. Many of these will be of odd and unusual types, sure to attract the attention of arboriculturists, who can here study specimens from



the Philippines and Alaska, as well as from temperate climes. In addition, of course, the park grove will provide an appealing beauty spot for sightseers in years to come. This is the first such collection of trees in existence accessible to the public. In this grove children may play, students may learn and state traditions be exemplified and cherished.

Some of the contributions to the Los Angeles grove were most appealing and throw an interesting sidelight upon the history and traditions of the states contributing. Trees and states as well as trees and human beings, do hold certain traits in common. So it seems that it was with a sort of instinct that each state selected the tree best setting forth its particular qualities and worth. Thus: Colorado sent a Blue Spruce, the mountain giant, a tree of great beauty and native of that state alone. Vermont, of course, sent the Sugar Maple—two of them. South Dakota, a Spruce, a hardy species of great vigor. Massachusetts two Oaks, red and white, the oak being the strongest of all trees, able to hold its own in more kinds of soil than any other. Connecticut contributed a "seedling from a seedling" from the original Charter Oak. Missouri sent a Walnut to represent vigor and fruition. Indiana a Sugar Maple, Tennessee a Maple and an American Elm, significant of this southern state's loyalty. Idaho a Pine. New York a Red Pine, for which species this state is justly celebrated. Nevada a Yellow Pine. Pennsylvania a White Ash, Arizona a Palo Verde, also a Silver Cypress, a vigorous tree, known for its gigantic bulk and long life. Utah contributed a Box Elder, Nebraska a White Cedar, a species of hardy growth, able to hold its own under the most adverse conditions. Maryland sent a Bald Cypress, Ohio a Buckeye, South Dakota a Black Hills Pine. Louisiana forwarded twin Magnolias, in honor of the twin grandchildren of the governor of the state. Alaska sent a Sitka Spruce and an Alaska Cedar, while seeds for propagating the famous Ausubo tree were received from faraway Porto Rico.

Perhaps the most interesting contribution of all, especially to the literary inclined, is that of an oak from the famous "Captain's Hill," in the town of Duxbury, Massachusetts. This hill was the site of the home and farm of Captain Miles Standish, and this oak, now transplanted to the lovely tropical setting in the Los Angeles grove is probably the direct descendant of oaks that grew on "Captain's Hill" in the days of the doughty Miles Standish.

Considerable interest has been shown and much difference of opinion came to the surface in the selection of trees. Many states found that they did not have a state tree, whereupon heated legislative debates followed. Some of the states, as did Kansas, held beautiful dedicatory ceremonies of blessing the tree in the legislative halls before starting it upon its journey. The Kansas tree, a fine young White Elm, chosen to represent the survival of the fittest, was one of the first to arrive, and was planted with fitting ceremonies by resident

Kansans in Los Angeles, on March fifth. In this first dedication many notables took part, among them Mr. W. E. Tipton, President South Dakota State Society; Mr. Sam Young, President Michigan State Society; Mr. G. F. Amberger, Treasurer Canadian Maple Leaf Club; Mr. Frank H. True, President Federated State Societies.

Final and more elaborate ceremonies will follow after all the trees are set, and a marked tablet will be placed at the foot of each tree, giving the name of the state whence it came, the kind of tree and its history.

### Gettysburg Trees--Allies of the Union

**P**LANTING memorial trees is an excellent idea. The visit of the Boy Scouts under the leadership of Professor F. C. Copp, of Pittsburgh, and setting such a tree on the Battlefield of Gettysburg was a fine demonstration of Memorial Tree planting.

It is the aim of the Battlefield Commission to preserve the scene of the decisive battle of the war of the States as nearly as possible as it was in 1863. Before the field was taken under government control, some groves, in which severe engagements occurred had been cut down. These have been replanted and replaced with close likeness to those in which the fighting was done.

Trees in the Battlefield Park are dying yearly, many of them being scarred veterans, bearing heavy loads of shrapnel and lead. The years in most cases have covered up their wounds, but when these witnesses of the bitter three days of battle are cut up, the bullets and other missiles come to light. About these the grain of the tree is torn and jammed; several of these mementoes of the past lie near the heart of oak or hickory, and where the number is great doubtless they cause the early death of many trees.

There are several springs on the battlefield. However, little the trees on the drier heights and the inhospitable rock masses thrive, by these springs and bordering famous Rock Creek and Willoughby's Run are trees that have grown great. Rooted by the waters their leaf does not wither, and they bear their fruit regularly with the seasons.

Trees played a large part in the Gettysburg battles. McPherson's Woods, Ziegler's Grove, densely wooded Culp's Hill and Big and Little Round Top and practically every wooded spot, large or small, sheltered the fighters and enabled victories. They were faithful allies in the cause of the Union.

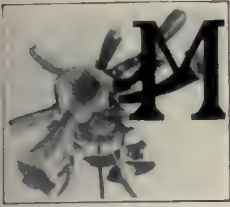
Trees gave then and continue to give their aid and blessing to the world. They helped to preserve the Union, and so America became peerless among the nations. It was this great America, unhampered by the problem of competing nations at home, mighty in manpower and wealth, that struck a terrific blow at the throat of the despotic foe of freedom, shattered his forces and gave emancipation to the world. So the fruitage of these trees is borne month by month and their leaves are still for the healing of the nations.



# EXPLORING THE GARDEN

By Dr. R. W. Shufeldt, R. A. O. U., Etc.

(PHOTOGRAPHS BY THE AUTHOR)



ANY years ago, when Louis Agassiz was a member of the faculty of Harvard University and lectured to his students on Natural History, he once stated that a competent naturalist might spend an entire year on any average square mile in the valley of the Amazon, industriously collecting and describing what he found there; and that in that space of time he would hardly have more than commenced to exhaust what the area contained in the way of living forms and plants. From what I know of modern methods in biology, I would most emphatically very much reduce the extent of the area; multiply the time at least by five or more, and allow ten hours a day for the work, with Sundays thrown in. Now, in any semi-cultivated half-acre garden in this country—especially should it contain a small pond and a little brook—an all-round naturalist might undertake to figure and fully describe its animal and plant life, and several years would be required to handle the task with any thoroughness whatever; indeed, a long lifetime might be needed to complete the undertaking, and many, many big volumes demanded to publish the report.



MYRTLE OR YELLOW-RUMP WARBLER

Fig. 1—This well-known bird is among the very first to arrive in the North at the time of the vernal migration. In posing the little fellow, one of the secondary wing-feathers was displaced as shown; otherwise it is a new and unusual capture of the living bird.

Between water and earth plants, some fifty or sixty species could easily occur in such a place, not to mention several different kinds of trees and shrubs; among the fungi there would likely be various toadstools and their allies. There would be a long list of water and earth insects and larvæ. Add to these the millipeds and their relatives, near and remote; worms of several species; perhaps fish in the pond, also frogs, newts, turtles, and



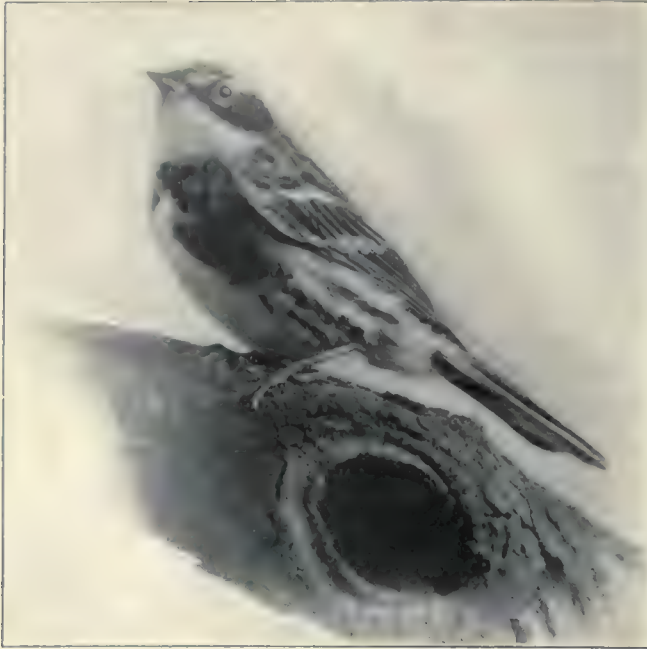
WILD STRAWBERRY IN BLOSSOM

Fig. 2—In its normal habitat this favorite little plant blossoms early in the spring. In some meadows hundreds of them are found, and it also flourishes along roadsides and in waste places.

so on; toads, tree frogs, salamanders; with possibly one or two species of snakes. By observing the visiting birds, quite a long list would result in the space of a lifetime—not to mention such mammals as moles, field mice, mink, or maybe a weasel, and, perhaps, a stray skunk.

Think of working out the life histories, the anatomy, the physiology, and the rest, of all these different plants and animals! Surely one would have to be industrious to achieve the undertaking in a lifetime. I have applied myself continuously to such work for considerably more





THE MYRTLE WARBLER

Fig. 3—The female of this species is not as brightly colored as the male bird here shown; that is to say, the yellows and blacks in the plumage are markedly duller.

than half a century, having published a number of books and more than a thousand memoirs and papers devoted to such topics, illustrated by many thousand figures—yet all this would not begin to describe the animal and plant life that we would meet with in our half-acre garden; indeed, it would not even adequately describe one thousandth part of it. Huxley devotes an entire volume to the Crayfish; Mivart gave us a still bigger one on the Cat; and my own work on the muscles of a single bird—the Raven—was equally extensive, carrying nearly a hundred figures. So, it would require fully five hundred big volumes to thoroughly describe the material referred to in the last paragraph.

In this country there are thousands of gardens of the kind I have in mind, as there are thousands of others of a different sort—among the latter a class of garden so trimmed up, so to speak, that all animal life and all wild plant life has been completely eliminated from them. Personally I prefer the wild variety, with just a dash of modern cultivation in evidence; one in which it is no rare thing to see a chipmunk running across one of the paths, or a red-headed woodpecker hammering away on the side of the trunk of a tree—with all else in keeping. For the nonce we will call this garden our garden, and in it we may—indeed, we can—often compare the highly cultivated flowers with the wild varieties from which they were, in time and through careful selection, derived. Much of this floral breeding or artificial selection was, long ago, done in the Old World; but later on American horticulturists have paid not a little attention to it. In this connection it is interesting to compare the elegant cultivated strawberries at hand with their wild relatives—the latter being seen yonder in the un-

touched corner of our garden (Figure 2), where, too, some lovely wild violets grow (Figure 12), the latter, in the estimation of many, quite outclass in beauty not a few of their cultivated descendants.

As we know, a large number of these cultivated plants found in our gardens throughout the country manage, through various kinds of seed-dispersion or otherwise, to find their way back to nature. They are then generally called "escapes;" and it is not long, a few generations perhaps, before their descendants have reverted to the wild forms. Some, like the blackberry lily, change not at all, its escapes closely resembling the plant as we find it growing in our gardens. Upon the other hand, the highly cultivated blackberry will, in a few generations, revert to the wild type as found growing in uncultivated fields and along roadsides everywhere (Figure 4).

Plants of the genus *Narcissus*, of which there are some twenty species, chiefly European, are also found in nature as well as under cultivation. The lovely and highly fragrant paper-white *Narcissus* is an excellent example, and this kind is especially widely known for the reason that many thousands of its bulbs are sold in flower stores from one end of the country to the other. Most of these



THE WILD BLACKBERRY

Fig. 4—A favorite plant which with its fruit, its pure, white blossoms, and pretty leaves, is beautiful to behold at all seasons of the year. However, its thorns and its being a harbor for chiggers are two of its drawbacks.



are grown as house-plants by placing from one to half a dozen of them in a suitable receptacle filled with small stones and water, the latter just covering the upper layer of stones. In order to start them well, they should be kept in a dark and cool place for at least a fortnight, or until the roots are largely in evidence, and then brought gradually to the light.

One of the shade trees in our garden, the leaves of which appear to be in a very dilapidated condition, has suspended from its many twigs curious little elongate bags, each about an inch or an inch and a half long, pointed at either end and stuck over the greater part of its outer surface with many small sticks. These are the cocoons of the common "Bag-worm"—a creature with a very remarkable history. The insect that makes these little bags is the larva of a moth, which is very injurious to our shade trees, especially in certain city streets in the eastern half of the United States. Every season or so, the shade trees that line the avenues and streets of Washington are special sufferers from this "bag-worm" and the only remedy is to collect the "bags" in the autumn and winter months, pile them up somewhere and build a fire over them; or, if convenient, consign them to a furnace fire. A year or so ago a prize was offered to the children of that Public School of Washington which could collect the greatest number of bag-worms from her shade trees. An enormous pile of them was shown



EXAMPLE OF TREE BUDDING

Fig. 6—Here is also one of our hickories in early spring; it should be carefully compared with the one in Figure 5,



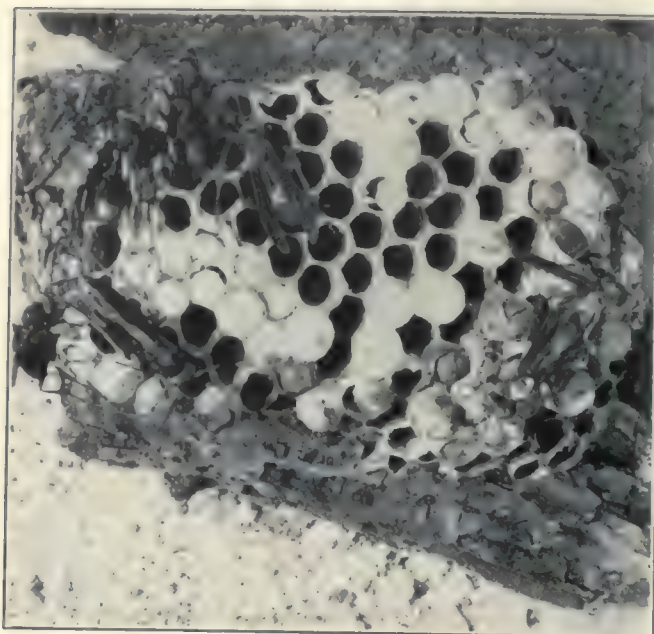
THE MODE OF TREES IN BUDDING

Fig. 5—We have here represented the opening buds of one of the hickory trees, as they first appear in the spring. This is a Washington, D. C., specimen, and collected by the author early in April.

me at one of the schools, the children of which had entered this contest. Much to the disgust of the exhibitor, I quickly demonstrated that more than four-fifths of the bags were empty—the insects having left them. They had been collected at the wrong season, and so no benefit followed. When the task is undertaken at the proper time and thoroughly done, marked benefit to the tree often follows, as was the case in the parks of St. Louis a few years ago. My illustration in a previous issue well shows a typical "bag" of one of these pests. Uninformed people often wonder what they are, as they notice them swinging in the breeze suspended from the twigs of some favorite shrub or tree in their garden.

In such a garden as I here describe, a great many species of insects will readily be found during the seasons when they occur. Often several kinds of lovely butterflies will hover over the flowers or alight about the little wet places in the pathways, or, perhaps, on the muddy margin of the pond. Then, too, if one goes out into the garden at night carrying a bright light, fine examples of our moths may also be seen flitting about, to be, perhaps, collected and studied. Often, during the day, a handsome Luna moth or a Cecropia may be found resting in some place, having just emerged from its cocoon, which latter you may chance to find not far away. Wasps, hornets and various bees, too, are frequent visitors, and their names and habits are well worthy of study. Quite a volume might be written on the wasps





#### FLORIDAN WASPS AND THEIR NESTS

Fig. 7—Most people are familiar with what this picture shows; and as a photographic result it is a very good one. Note the open, unused cells—the closed ones contain larvae. Note, too, the various poses of the owners of the establishment.

alone, especially such a "social wasp" as I show in my Figure 7, and the same may be said of the white-faced hornet here shown, in Figure 10.

In some respects, the habits of the wasps are like those of certain bumble bees, while they construct the well known, flat, gray paper nests for their young, which are familiar to all observers living in the country. These nests are often found even in very small city gardens, should the insects happen to take a notion to build there—or, perhaps, under the roof of the kitchen porch or in the shadow of some convenient part of the under side of the fence rail. They are peaceful neighbors enough if left severely to themselves, but very combative if interfered with to even a very slight degree.

These wasps construct their paper nests from wood-pulp; and it is quite likely that ages ago, when the human race was in a far more primitive state than it is at present, it gained its idea in paper manufacture from the social wasps, which had the same habits then as now. Most of these social wasps obtain the material from which they make their paper from the looser parts of the surface of old, unpainted fence boards, rails, house-shingles and so on, and it is formed into the necessary pulp by being chewed up with their saliva as a mixer.

But, as I say, one having the requisite knowledge might readily write a book—and a good-sized volume at that—on our wasps alone; and to tell the truth, a great many volumes have been published about them. So that the owner of such a garden as is here described would find it a matter of the greatest possible interest to obtain some of these books, and compare the statements made in them, and the cuts given, with the living insects and

the structure of their nests as he meets with them on his preserves in the summer time. It is very profitable to compare such histories with the corresponding ones as they refer to our many species of ants, bees and hornets—relatives of the wasps. The white-faced hornet, shown in Figure 10, is the insect that builds the big paper community nest, with which we are all so familiar.

It is truly wonderful how many birds will visit our modest garden during the course of a year; they will, during the spring migration, be most in evidence from early daylight till breakfast time, and then again as evening comes on. When autumn approaches, the migration that takes place is equally interesting; but then, we'll see more or fewer birds in our garden during all the months that make up the seasons. In winter we may look for various finches, sparrows, crossbills, hawks, owls and not a few other species that come to us during that time of the year. Should your garden be fortunately situated with respect to seclusion and quiet, it is not unlikely that a number of birds may nest within its precincts. A lovely pair of Kingbirds may make their home in your apple tree (Figure 11), or, should you understand how to invite them with food and nesting-places, quite a host will reward you as tenants and neighbors. Especially do I refer to the robins and the wrens, the blue-birds and the summer warblers, and, indeed, not a few other species. Occasionally some birds will nest in such



#### BEAUTIFUL TREE BLOSSOMS

Fig. 8—The way the Ash-leaved Maple or Box Elder wakes up early in April in the District of Columbia; it may grow to be seventy feet high, flourishing best in swamp-lands and along rivers and streams where the soil is rich.



a convenient place that your camera may get in its work; and you may, during the season, be led to take some notes really worth the while, making bird histories that others will be glad to read should they ever appear in print. Notwithstanding that so much has been written about our birds, coming, as it has, from many, many pens, there still remains ample material for the generations of young ornithologists in the years to come.

Then there are the warblers which have been mentioned in a former paragraph—and what a wonderful group they represent! Among the first arrivals of them in the spring is the Myrtle or Yellow-rump Warbler, an elegant little fellow here shown in Figures 1 and 3—a male bird, from life, as he appears on two sorts of perches. As is the rule in this group, the male possesses a more lively coloration of plumage than the female, although its pattern is about the same. A conspicuous median stripe of brilliant yellow ornaments the crown; the lower back or rump is the same, and there is some yellow on the sides—otherwise the plumage is black, gray and white, as indicated in the figures. Among the warblers generally the chief colors are various shades of olive, gray, orange, yellow,

rarely red, black and white, blue, and the dull greens of various depths. The manner in which these colors are distributed and contrasted accounts for the great beauty of these little birds, while in the matter of song they are far behind the real songsters of our avifauna. Their little twittering notes are charming nevertheless, especially when we come to know them, and can, without seeing the bird, recognize the species by its notes or simple song. It requires several springs of careful attention and study to master this, and it truly is remarkable how proficient some of our ornithologists have become in this accomplishment. Not only are the notes recognized when any particular warbler gives vent to them, but the listener can imitate them to such perfection as to deceive

the songster itself. Recently there has been placed on exhibition in the lower hall of the United States National Museum, at Washington, cases containing mounted specimens of nearly all of our true warblers; so that those interested in our birds, and in this group in particular, may study their forms and plumages at their leisure. We have over fifty species of these little birds in our avifauna; some are western types and never occur in the Middle or Atlantic States—and *vice versa*.

Then, should there be some old trees on the place, we are sure of visits from the noisy little White-breasted Nuthatches (Fig. 9). This little gray, black and white fellow was, years ago, known to me as the Black-capped Nuthatch; while Wilson, to make sure of the species, called it by both names, giving the first the preference.



LITTLE WHITE-BREASTED NUTHATCH

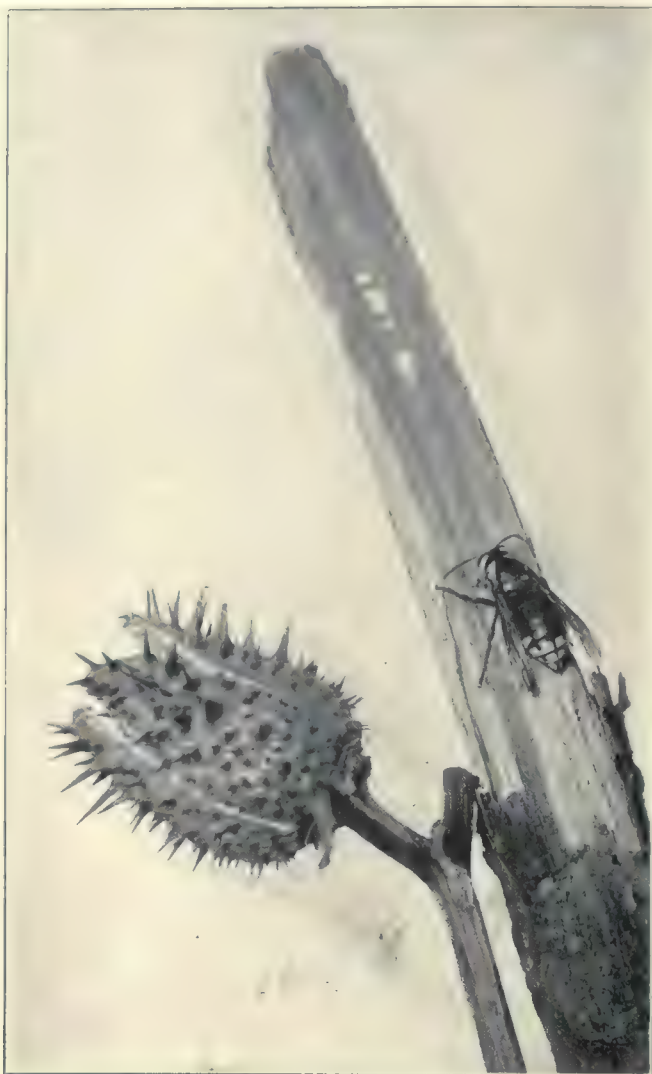
Fig. 9—A very familiar species of Eastern United States, representing a male specimen, taken natural size and in a characteristic pose.

Pennant, an ornithologist of the last century, considered that well-known bird of ours merely a variety of the European Nuthatch—a very patent error. It was, however, a very common notion of the continental naturalists of his time to make the claim that all the plants and animals of this country were but mere “varieties” of those of the Old World. Here, in the Middle States, this little fellow nests

early in April, generally selecting a hollow in some tree where a hole leads into it. Sometimes they have been known to select a hollow fence-rail for the same purpose. The female lays, as a rule, five pretty little white eggs, rather dull, and speckled with some shade of brown at the larger end. She is the recipient of the closest attention from the male during the period of incubation; he keeps her supplied with food, and constantly visits the entrance to the nest, peeping in to see that all is well with his much beloved mate. Should she come out for food or for a little exercise, the male redoubles his attentions, keeping up a perfect string of quaint love-notes to assure her of his affection and guardianship.

Far back in ornithological lore we were told that the





THE WHITE-FACED HORNET

Fig. 10—A handsome black and white insect and one of the most conspicuous representatives of its genus, which is capable of giving a sting of great severity.

nuthatch, or a nuthatch, was in the habit of cracking the various kinds of nuts it came across, in search for the maggots or other worms that might be found in them; further, the bird gathered quantities of worm-eaten nuts for a winter's supply, hiding the same in hollows of trees.

All this is not entirely true, as no nuthatch that ever lived could crack a hickory nut or an American walnut. On the contrary, these birds feed largely on various species of small bugs, larvæ, ants and seeds; they search for such food incessantly during the day, thus rendering signal service to our forest trees and timber. A writer at hand says of this favorite little bird that it "gets its living from the trunks and branches of trees, over which it creeps from daylight to dark. Insects and spiders constitute a little more than 50 per cent of its food. The largest item of these are beetles, moths and caterpillars, with ants and wasps. The animal food all in the bird's favor except a few ladybird beetles. More than half of the vegetable food consists of mast—acorns and nuts and large seeds. One-tenth of the food

is grain, mostly waste corn. The Nuthatch does no known injury but much good."

Personally I have studied and collected the White-breasted Nuthatch from Long Island Sound, and southward through the Middle States, and I am free to confess that I have yet to see one of them having anything to do with what in any way resembled a nut. Wilson, who was a close observer of the species when it was far more abundant than it is now, tells us that "it is, however, said, that they lay up a large store of nuts for winter, but, as I have never either found any of their magazines, or seen them collecting them, I am inclined to doubt the fact. From the great numbers I have opened at all seasons of the year, I have every reason to believe that ants, bugs, small seeds, insects and their larvæ, form their chief subsistence, such matters alone being uniformly found in their stomachs. Neither can I see what necessity they could have to circumambulate the trunks of trees with such indefatigable and restless diligence, while bushels of nuts lay scattered round their roots."

Apart from its great abundance, Wilson's observations on the habits of the White-breasted Nuthatch are fully in agreement with my own. He says it "is common almost everywhere in the woods of North America, and may be known, at a distance, by its notes, *quank*,



KINGBIRD, OR TYRANT FLYCATCHER

Fig. 11—A brave little species which in defense of its nest and young, does not hesitate to attack any eagle or hawk that flies within its neighborhood.



*quank*, frequently repeated, as he moves, upward and down, in spiral circles, around the body and larger branches of the tree, probing behind the thin, scaly bark of the white oak, and shelling off considerable pieces of it, in search after spiders, ants, insects, and their larvæ. He rests and roosts with his head downwards, and appears to possess a degree of curiosity not common to many birds; frequently descending, very silently, within a few feet of the root of the tree where you happen to stand, stopping, head downward, stretching out his neck in a horizontal position, as if to reconnoitre your appearance; and, after several minutes of silent observation, wheeling round, he again mounts, with fresh activity, piping his unisons as before. Strongly

The cut of the White-breasted Nuthatch illustrating the present article is of one I had alive for a time, which I captured near my home in Washington. I made several photographs of it, it being a male, and the best of these is here shown. The female of this species is not as brightly colored as the male, the black being rather dingy, especially on the crown of the head and often elsewhere in the plumage. We have a number of interesting nuthatches in our United States avifauna, and some of these will receive my attention in future issues of *American Forestry*.

One may often study in a garden, in the early spring, the budding of various trees, and this study is a most interesting as well as important one. Our space here



BLUE AND CROWFOOT VIOLETS IN BLOOM

Fig. 12—All of our American violets, under proper conditions, thrive well when transplanted into our gardens.

attached to his native forests, he seldom forsakes them; and, amidst the rigors of the severest winter weather, his note is still heard in the bleak and leafless woods, and among the howling branches. Sometimes the rain, freezing as it falls, encloses every twig, and even the trunk of the tree, in a hard, transparent coat or shell of ice. On these occasions I have observed his anxiety and dissatisfaction at being, with difficulty, able to make his way along the smooth surface; at these times generally abandoning the trees, gleaning about the stables, around the house, mixing with the fowls, entering the barn, and examining the beams and rafters, and every place where he may pick up a subsistence."

will admit of giving but a few examples of the trees, and I have selected, as illustrations, three very beautiful ones, which are shown in Figures 5, 6 and 8—the first two showing the opening buds of the hickories, and the third is the ash-leaved maple, also known as the box elder. These tell their own stories; and, as I have frequently pointed out, foresters and other students of trees can make no better use of their cameras than to secure a full collection of such studies, arranging the photographs with full and accurate notes in an album suitable for their permanent preservation.

Hornets, bees and wasps are constant visitors to gardens in the country, and sometimes to those found in



the hearts of our cities. The study of their habits in nature is brimful of interest, and there is a large American literature upon the subject which may be examined with great advantage. In order to appreciate their forms, characters and coloration, one should capture specimens of the various species, and this is readily accomplished with a wide-mouthed bottle and a piece of stiff cardboard two or three inches square—or enough to cover the mouth of the bottle, with some to spare. If the bottle is brought very gradually and silently to one side of the insect, with the mouth towards the specimen, the cardboard being handled in the same way in the left hand, it is generally an easy matter to secure your specimen from the flower by skilfully closing the two together. Be sure the bottle is clean and of very clear glass, for then you can examine your captive through it to the best advantage.

In Figure 7 we have a wasp and its nest sent me by a friend in Florida; it is one of the reddish kind that builds the form of nest shown; while in Figure 10 I have given a fine cut of the common White-faced Hornet of the East—the one that builds the big paper nest with tiers of paper cells inside. As we are all aware, the sting of these insects is very severe, especially that of the hornet shown in Figure 10. If the victim be a man, and a sufficient number of these insects sting him during an attack by them, he may die from the amount of poison injected, which has happened although in rare instances.

In New England, many years ago, I came across one of these paper nests of the White-faced Hornets in an extensive pasture field, and it was situated in an angle of the surrounding stone-fence. Evidently it had been attacked as it was considerably battered through stones having been thrown at it. Believing the owners to have been completely used up, I also incautiously threw a stone at it, and this caused the inmates, of which there were many, to issue for a fresh attack. One wasp promptly stung me between the eyes, and the lids of both soon swelled so that I was, to all intents and purposes, blind. Fortunately, I knew the country well; and so, by feeling my way along by the fences, home was reached in the course of an hour or more; but it was several days before my physiognomy resumed its normal appearance, and the family ceased asking me whether the hornet had been a male or a female; or whether it made any curves when it came my way; or “did it fly backwards in order to sting me in the way it did,” together with similar sympathetic inquiries.

Few insects have such interesting habits as the bees, hornets and their immediate allies; and what has been written about them furnishes reading that even a layman will take to and enjoy.

The old clock has just announced 5 A. M. Hear those “peepers” down in the marshy end of your little pond? and the rich notes of the first brown thrasher of the year, as he pours them forth from the topmost twig of the lone birch tree close to your window? Ah,

spring is indeed here again; and now is the time for a morning stroll in your garden, in that you may hear and see things as you breathe the glorious air of this most lovely season of the year—laden as it is with the fragrance of flowers that carry such a volume of happy thoughts to your mind.

THE teacher had been reading to the class about the great forests of America.

“And now, boys,” she announced, “which one of you can tell me of the pine that has the longest and sharpest needles?”

Up went a hand in the front row.

“Well, Tommy?”

“The porcupine.”—*Tit-Bits*.



Photograph by A. Sargent

#### THE KENTUCKY COFFEE TREE

Claimed to be the largest and handsomest one of its kind, this tree has been nominated for a place in the Hall of Fame for Trees by Cora June Sheppard, of Shiloh, New Jersey. It stands 75 feet high and was planted in 1804 directly in front of the historical Verplanck mansion at Fishkill-on-the-Hudson, occupied for some time by Baron Steuben during the Revolution and the scene of the first meeting of the Society of the Cincinnati. The property on which the tree was planted came into the Verplanck family from the Indians, in the reign of James II., King of England in 1663, and it has remained in the family ever since.



## FRANKLIN B. HOUGH--A TRIBUTE

AS July 20th of this year is the centennial anniversary of the birth of Dr. Franklin B. Hough, the acknowledged "Father of American Forestry," it is befitting that we note in this issue something of his personality and the thoughts which started him in a career which resulted in interesting the United States government in the care of its forests. For his unselfish devotion to this cause until accomplished the American nation will always owe him a debt of gratitude.

We learn from his biographer that as a young man he was of a studious nature, and that he acquired an advanced education in spite of the hardships which young men have to encounter who work their way to a college degree.

He graduated from Union College in 1843, and from the Western Reserve Medical College in 1848.

His enthusiasm in scientific research from boyhood up was boundless. It was of the kind which inspired others with whom he came in contact, and while he appreciated enthusiasm in others in all branches of science, his special interest lay in the fields of geology and botany.

His extensive journeys afield in pursuit of these studies doubtless did much to build up the exceptionally good physique with which he was endowed, for he was wont to refer to his journeys afoot of twenty or more miles in a day, and carrying, perhaps, as many pounds of precious mineral specimens, as merely incidents.

He amassed considerable collections, and his articles in the press on his early observations in various fields of natural science were full of enlightenment and interest.

They naturally came to the attention of others of kindred interest elsewhere, and acquaintance would result which sometimes ripened into friendships waxing stronger and of more mutual interest as time went on. Among the strong personal friendships thus formed in early days were those with Louis Agassiz, John S. Newberry, Spencer F. Baird and others who have left lasting influence in their respective fields of science.

After his return from service in the Civil War as a surgeon he devoted himself entirely to scientific and literary work, and in the years which followed wrote many books and articles of importance. His biographer in referring to them states:

"There is probably no son of New York whose biblio-

graphical record shows so many, so varied, so extended and so valuable a contribution to the literature of the state."

In referring to Dr. Hough's characteristics this biographer, after a long personal acquaintance, writes:

"He had a very remarkable power of concentrating his mental energies on one subject, and therefore made himself master of it with unusual rapidity. He made himself, in this way, successively, a good botanist, a good mineralogist, a good compiler of history, a good statistician, a good forester.

"He had a good working memory, so that new facts with him fell easily into place with others he had gained.

"He was conscientiously thorough in his work. He spared no labor himself to bring his statements down to the last degree of certainty."

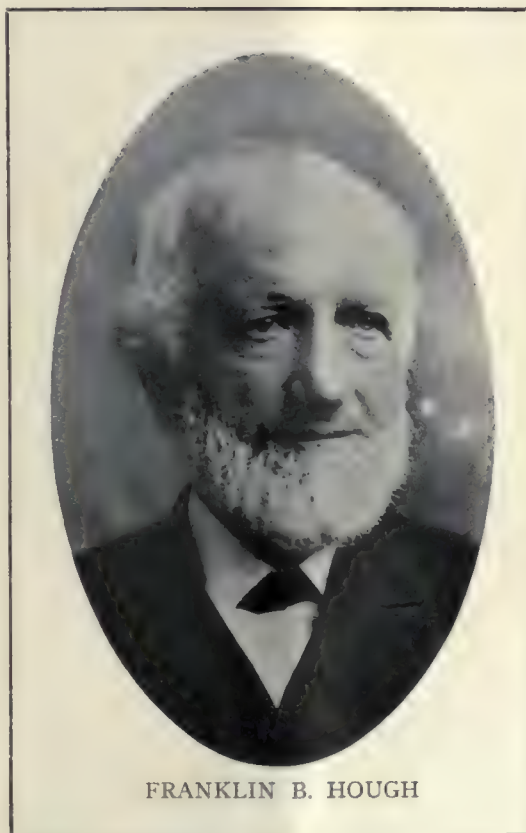
Such was the make-up of the man who was destined, in the self-imposed task, to effectually stem the tide of public sentiment regarding the use of our forests, and to formulate and carry into execution plans which resulted in the commencement of their management by the government—the establishment of the United States Division of Forestry (now called the Forest Service) of the Department of Agriculture.

To understand some of the obstacles he had to contend with we must appreciate that from the commencement of settlement by white man the policy had been to destroy all the forests possible and make ready for agriculture. That became a maxim which governed generations and was still being blindly followed by the masses of landowners; but thinking men

had begun to reason that such measures should not be continued indefinitely.

In those days Dr. Hough was twice Superintendent of the New York State Census, for the years 1855 and 1865, and while comparing these two census reports he noticed a great falling off of timber supplies in certain localities during the period of ten years. "It did not take much reasoning," quoting his own words, "to reach the inquiry, 'How long will the supplies last—and what then?'"

He was convinced that wanton destruction of the forests must stop as soon as possible, and provision be made for the proper use and perpetuation of those that are left. He reasoned that it was a matter in which the gov-



FRANKLIN B. HOUGH



ernment should act, and he lost no opportunity to impress upon others of influence the importance of his subject.

But what could a private individual do to change a deeply rooted belief on the part of the public that the forests should be destroyed?

A plan finally occurred to him which proved true to his hopes. He was a member of the American Association for the Advancement of Science, and he reasoned that if he could secure action by that august body recommending that the government take steps in the management and preservation of its forests it would be sure to have weight with the authorities at Washington.

He accordingly prepared a forceful paper entitled "The Duty of Government in the Preservation of Forests," and read it before the A. A. A. S. at its meeting in August, 1873. In it he suggested that a committee be appointed to memorialize Congress and the state legislatures on the importance of the subject. This was done, and he was made chairman of the committee.

We cannot here review the many months of anxious labor, interviews, rebuffs, disappointments, and only occasional encouragements with which Dr. Hough and the few that were with him met before final action by Congress was taken. (See "The Incipency of the Forestry

Movement in America," American Forestry, August, 1913.)

At the last moment before the close of the second session of Congress in which the subject had been brought up, final favorable action was taken, and the law was passed establishing the Forestry Division of the United States Department of Agriculture. It was a victory won by Dr. Hough and his small band of adherents, which has been of ever-increasing value and importance to the nation.

As illustrative of the general lack of appreciation of this subject in those days only a paltry appropriation of \$3,000 was made for the first year's expenditures of the new division.

Dr. Hough was appointed the first Chief of the new division in 1876, and prepared the first reports issued. They have been looked upon as "the foundation upon which our forestry system has been building since," using the words of one of his successors in office.

In a review of the first report, by an officer of the Wurtemberg forest service the following statement was made:

"It awakens our surprise that a man not a specialist should have so mastered the whole body of American and European forestry and legislation."

## THE FAXON WHITE PINE PLANTATION

A TWENTY-EIGHT-YEAR-OLD plantation of white pine is shown in the foreground of the picture, on the side. Mr. Faxon, the owner of this plantation, began planting white pine 36 years ago. He has the honor of having set out the oldest white pine plantation in New York State, although he is still a comparatively young man. For the portion of the plantation which is now 36 years old, Mr. Faxon has been offered \$500 per acre for the timber "on the stump." As the trees are making their most vigorous and profitable growth at this age, Mr. Faxon has refused

to sell. In the background is shown a white pine stand which occupies land that was cultivated when Mr. Faxon was a boy. The pit where potatoes were stored 50

years ago is still plainly in evidence. A dense stand of natural growth white pine is just as profitable as planted pine. This fact is illustrated by a statement contained in a bulletin of the United States Department of Agriculture as follows: "Two acres of white pine, near

Keene, New Hampshire, were sold three or four years ago, before the war prices, for \$2,000, on the stump. The total stand was 254 cords, which equals 170,000 board feet, or an average of 85,000 feet per acre. The trees were from 80 to 85 years old; so the growth on each acre was about 1,000



Photograph by A. B. Brooks.

THE FAXON PINE PLANTATION AT CHESTERTOWN, NEW YORK

feet per annum and the gross returns about \$12.20 per acre per annum." So Mr. Faxon has a property of high actual as well as potential value.



# WHAT FORESTRY MEANS TO SOUTHERN COMMERCE

By Ovid M. Butler, Forester, American Forestry Association.

Before the Commercial Secretaries Association, Nashville, Tennessee

I DEEPLY appreciate this opportunity to address you on forestry as related to Southern commerce. It is a subject which any organization of business men, and most particularly one representing commercial leadership, cannot long escape. Forestry is a business. Its object is to grow timber crops on lands chiefly valuable for timber crops. I believe that within ten years the forest problem will be recognized as the most pressing industrial problem confronting the South.

That statement, it may be charged, is verbal extravagance. Let us, therefore, briefly take stock of what has happened, what is happening, and where the South stands today in the competitive lumber markets of the United States. For two decades this south land has led the world in lumber production. For three generations it has led the world in the production of naval stores. Since 1900, the southern pineries have contributed more than 50 per cent of the softwood lumber consumed in America. From the beginning of the naval stores industry, they have contributed practically 100 per cent of the turpentine and rosin used in this country. In addition, they have supplied for export an amount greater than the naval store exports of all other nations combined.

With the possible exception of cotton, southern forests have been the South's greatest producer of wealth for more than a quarter of a century. They have brought to your States 20,000 sawmills, representing an investment of more than half a billion dollars. They have created an industry which stands first among industries in six southern States, second in four and third in three. They supply employment to almost half a million people. In the last 20 years, they have brought into the South from the sale of lumber and other forest products alone, upwards of 10 billion dollars.

In view of these impressive facts, it is unnecessary to dwell upon the extent to which southern commerce depends upon a continuous supply of raw wood. It is well to bear in mind, however, the ramifying character of this dependency. From your great furniture industry, centering at High Point, North Carolina, to the oil industry of Texas, the products of the forest are essential elements of business. Wood for boxes is as necessary to the citrus industry of the South almost as the fruit itself. Experience has long ago proven that the ease and price at which an industry can obtain its wood requirements often determines its ability to meet competition in the world's markets.

American business, let us remember, is built upon competition. The South today occupies the most dominant competitive position of any region with respect to the lumber trade. It is a common saying that southern pine sets the price of softwood lumber. The reason lies not in the fact that the South contains more than

one-sixth of the nation's remaining softwood, although that is a contributing factor, but in the fact that forest exhaustion has eliminated other eastern regions as effective competitors. In that situation the South, by chance, profits today merely because her forest capital is not yet wholly spent.

What has happened to place the South in this commercially advantageous position? American lumbering, as an industry, began with the early settlements in New England. It spread slowly into New York and then following 1850, in order to keep pace with the rapid sweep westward of land settlement and commercial development, it moved swiftly into Pennsylvania and on into the Lake States. By 1880, the center of lumber production had shifted to the Great Lakes region. Twelve years later this region reached the peak of its lumber production. In the meantime, the lumber-jack, followed by the sawmill, had pushed into the great hardwood forests of the Ohio Valley, the mixed forests of the Appalachians and the rich pineries of the South Atlantic and Gulf Coast States. In small numbers, they had begun pushing across the Prairie States into the Rocky Mountains and into the heavy forests of the Pacific Coast. Following 1900, the Southern States rapidly took the lead in lumber production.

Step by step, the industry has moved westward, as one region after another has been cut out—first New England, then New York, next Pennsylvania, following that, the Lake States and finally the central hardwood region. Today, the greatest lumber markets in the whole world lie at the very doors of these regions, but by reason of exhaustion of their forests, they are helpless victims of their own harvests. Their forest cupboards are virtually bare and their own industries must compete one against another and with adjoining regions for imported lumber transported from distant parts at high freight rates.

Of the original stand of saw timber in the United States, only about two-fifths remain, 61 per cent of which lies west of the great plains and 23 per cent in the Southern States. Only 16 per cent in scattered fragments remains in all the rest of the country, including New England, the Middle Atlantic, the Central and the Lake States. This great territory not only contains 60 per cent of the nation's population, but it is the richest and most highly developed area in the country. It is the hub of the world's greatest lumber markets. The South's proximity to those great markets, coupled with the absence of a strong competing region closer than the Pacific Coast, 3,000 miles distant, give it a commercial advantage unequalled in the history of American lumbering, if not in American business.

But what is happening in the South? It is an old



saying that history repeats itself. There can be no doubt but that the history of lumbering in New York, Pennsylvania and the Lake States is now repeating itself in the South. The industry has passed its crest and is breaking camp, so to speak. There are ample evidences. The fact that in the South the cut of saw timber is now more than five times the annual growth carries some idea of the rate at which virgin stumpage is disappearing. Your original pine forests covered some 125 million acres and contained close to 650 billion feet.

Four-fifths of the original yellow pine forests of the South have now been cut. The remaining fifth is going rapidly.

It has been the history of other timbered regions that, beginning with small and scattered exploitation, the lumber cut increased steadily to a point where the industry was fully developed and then—as exhaustion of stumpage set in, decreased gradually until production became a small factor in the industrial life of the region. For example, the State of Michigan, which led all States in lumber production from 1870 to 1895, today supplies a lumber cut less than one-half that of the State of Massachusetts. The South is now passing through such an era. The production curves of the Southern States are falling rapidly. Since 1909, the cut of southern pine has declined 31 per cent.

Census figures for 1920 show that in that year the South yielded its lead in lumber production to the West. They show that the number of southern mills cutting over one million feet a year decreased by 490 or 20 per cent in 1920 as compared with 1919. It is highly significant that during that same period the number of mills on the Pacific Coast showed a gain of 27 per cent. These figures go to confirm testimony given before a Congressional committee by a representative of the Southern Pine Association to the effect that a survey of 5,400 southern mills, representing over 50 per cent of southern pine production indicated that by the end of December, 1923, 81 per cent of these mills will have exhausted their timber and ceased production.

Let us examine for a moment into what the lumber business means in the commercial life of a southern State. Take Mississippi, as an example. According to the last census, the forest industries of that State rank first in importance; they employ 70 per cent of the State's wage earners and the manufactured value of their products amounts to \$300,000,000 annually or 60 per cent of the value of all manufactures in the State. Will it be asserted that the decline of that industry is of no moment in the commercial welfare of the State?

These things are mentioned merely to emphasize that you are today face to face with a great industrial problem here in the South. That problem is to make permanent your forest industries. You have before you as examples of inaction the north central group of States which have passed from lumber exporting to lumber importing States. They are paying a tribute of \$300,000,000 annually to import lumber from the South and the West,

and the freight haul is adding from 50 to 150 per cent to the prices.

Contrast with that situation the South with its remaining forest reserve. Instead of \$300,000,000 leaving your States every year in exchange for imported wood, your forests are bringing into your southland a third of a billion dollars annually. But, gentlemen, if you would preserve that balance in your favor the time for action is at hand. A further shrinkage in your pine industry is inevitable. It has been estimated that within 15 years the South will not be producing enough lumber to meet its own local demands and will, therefore, be forced to import lumber from the Pacific Coast. There is nowhere else for it to come from. Imported lumber means higher priced lumber for the home builder no less than for the citrus grower or the furniture manufacturer.

But, it will be asked, what can the South do about it? With four-fifths of its virgin timber gone, how can it provide permanency for its forest industries? The answer to that question is by the application of forest management to its forest lands. Here in the South you maintain a cotton industry by keeping a certain area seeded to cotton, growing cotton, producing cotton.

Apply that same principle to your forests and your forest lands, and the permanency of your forest industries will, before many years, be as solid and as deeply rooted as your cotton industry.

It is idle and unproductive forest land that today is undermining your forest industries. So long as your area of vacant cut-over land continues to increase and your area of growing forests to decrease, there can be but one answer to the existence of your forest industries. It is a significant thing—first because it shows the productive power of your cut-over lands and second because it indicates the shrinkage of your old growth stumpage—that a quarter of the pine cut of the South today comes from second growth forests, which Nature has brought back on some of these cut-over lands, despite their misuse and neglect. Your second growth pine is today being cut at the rate of  $1\frac{1}{4}$  million acres a year, and the Forest Service is authority for the assertion that under present methods of cutting and protection, large areas of this new growth land will not come back to pine.

The question will probably arise in some minds as to the value of this cut-over pine land for other uses. It is true that much of it is agricultural land but much of it is not. The forester does not advocate raising forests on good farm lands. His dictum is, raise forests on lands chiefly valuable for forest growth. If the South will do that, it will maintain in perpetuity its present forest industries and in the course of time gradually expand them. According to the land classification of the United States Department of Agriculture, there are in the pine belt of the southern coastal plain region alone, 36 million acres better suited to growing forests than to farming. For the entire South, the area is much larger. Stripped of their timber, these lands have been abandoned to unrestricted fires, confiscatory taxation



and general human neglect, all of which are fast dispossessing Nature in her efforts to reforest them. It is merely adding yearly to your 35 million acres of denuded and unproductive land.

On the other hand, the commercial possibilities of re-growth on these southern forest lands are unequalled in any other region in this country. Nature has endowed the South with some of the most remarkable trees in the United States. Your long leaf and slash pines, for example, not only rank first for structural lumber, but they are the source of your naval stores industry, which yield annual products valued at more than \$40,000,000. Their wood is convertible into a great variety of by-products, including industrial alcohol of highest quality, pulp and paper, pine oils; etc. Natural reproduction of the southern pines is simple and easy. Their growth is exceedingly rapid—500 to 1,000 board feet per acre per year, depending upon the quality of the soil. They will yield pulp wood, firewood, railway ties or turpentine crops in 20 to 25 years and merchantable lumber in 30 to 40 years. Apply a conservative growth rate of 400 feet an acre a year to the 36 million acres of pine land in the coastal plain region and you will gain some idea of the productive power of these lands when put under forest management—14½ billion feet of timber growth each year, or more than enough to maintain the lumber industry at its present capacity for all time, to expand your declining naval stores industry and to build up a permanent pulp and paper industry on the forest waste. At present prices, that means an inflow of wealth to the South aggregating over 350 million dollars annually and indefinitely. It means the South's continued dominance of the great lumber markets to the north. It means stability and growth to your local wood using industries, because assurance of a permanent timber crop here in the South will inevitably draw wood using factories from all parts of the North. It may be of interest to you to know that in the seven years following 1912, the lumber cut of the State of New York declined 65 per cent and coincident therewith, 35 per cent of the wood using industries of the State went out of business. And finally, forestry in the South means a very decided commercial advantage to all your industries using wood, in the competitive markets of the world. Whether a Florida orange or a California orange will be served on the breakfast tables of Des Moines, Iowa, a few years hence, may depend on whether your fruit growers can obtain the box lumber locally or must import it from Oregon and Washington.

Because of favorable growth conditions forestry in the South is an exceedingly simple and practicable thing. It involves primarily the protection of cut-over and growth areas from fire and other destructive agents, the taxing of growing timber as a periodic soil crop instead of an annual crop, which it is not, and finally, cutting methods which assure the leaving of sufficient seed trees or young timber to keep the land continuously producing growing forests. Methods of applying these principles will naturally have to vary to meet local problems and local conditions. Restrictive measures, for example, should be imposed upon the promiscuous turpentine of young trees. The naval stores industry, it is

generally admitted, I believe, should be conducted on the principle of getting the maximum yield of gum from the tree at the right time and in the right way instead of on the principle of getting the least out of the tree as soon as possible. Turpentine, correctly done, is a perfectly proper and desirable step in the harvesting of the forest crop. One other point, the grazing of cattle on forest land is not antagonistic to forestry if sanely regulated.

Thus far, my references have been largely to your piney woods but the broader aspects of the situation apply with equal force to your hardwood forests. As to them, it is only necessary to add that the South today contains 61 per cent of the remaining hardwood supply in the United States and in many respects the country is more dependent on the South for hardwoods than for softwoods. There is no great reserve of hardwoods in the West. Today furniture in Grand Rapids, Michigan, is being made from trees which grew near the mouth of the Mississippi River. Keep your hardwood lands which are not more valuable for agriculture, growing timber and the balance of trade in the hardwood market will be with the South.

Whether we talk hardwoods or softwoods, the South's opportunity is equally great. It may be summed up as follows: First, the exhaustion of other forests readily accessible to the great lumber markets of America; second, the strategic geographical position of southern forest lands in relation to those markets; third, your transportation advantages by rail and water over the West Coast, the last great forest reserve in this country; fourth, your long coast line and its favorable shipping routes into the lumber markets of the whole world; fifth, the cheap logging made possible by the easy topography of much of your timber land; sixth, the increasing value of forest stumpage in the eastern United States; seventh, the productive power of southern forest soils and the rapidity with which timber crops may be produced; and finally, a great variety of species of highly commercial value.

But how is forest management in the South to be brought about? There is only one way and that is through leadership and public enlightenment. When the people awaken to an appreciation of the value of permanent forests as they have, although too late, in such States as New York and Pennsylvania, when they are made to realize that the exhaustion of their forests and their forest lands means loss of industries, loss of population, loss of taxes, and loss of wealth, they will provide fire protection, fair taxation, regulatory cutting and other necessary measures. Education is the first forward step. Already much has been accomplished in some of the Southern States, notably in Louisiana. The commercial clubs of the South can render great service to their communities and to their states in bringing home to their people the meaning of forestry and the need for it. Educate your members, educate your neighbors, and above all, educate your legislators. If your State has not a forest department, help crystallize a public sentiment which will create it. It is a cause worthy of your leadership.



# MINOR PRODUCTS OF THE MOUNTAINS

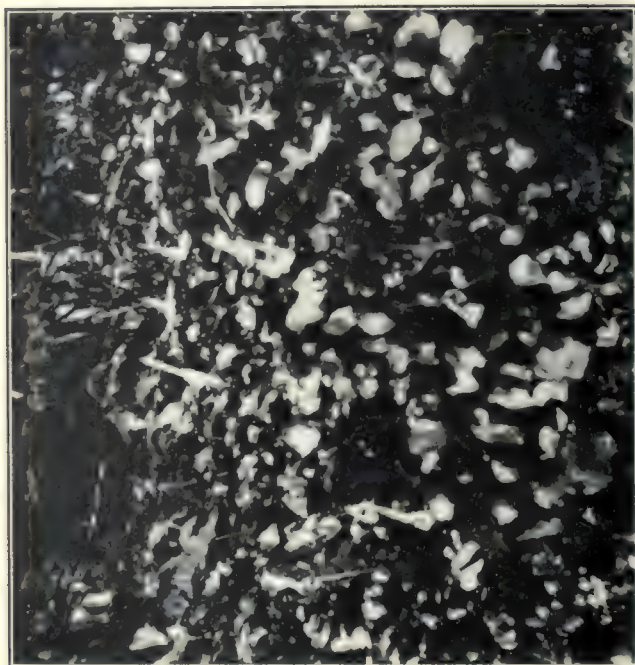
By Anna Ross

**F**AR up in the heights of the Blue Ridge lies a wonderland—a land of mountain peak and deep valley, forest and stream and cataract, mist and cloud and light and shadow—the fairest “that e’er the sun shone on.” The poet, the artist, the botanist and the nature lover find happy hunting-grounds in the delectable hills and the summer time brings its throngs of visitors, some of them gay pleasure-seekers but many more in search of rest and quiet and the life-giving atmosphere of these high altitudes.

The mountaineer is busy at this time in the kitchen, the laundry, the livery stable or garage. But September sees the crowd depart and the mountaineer comes into

up and down rocky cliffs, over old logs and fallen trees, across creeks and through thickets of rhododendron, in search of her harvest. An expert picker will gather from eight to ten thousand leaves per day, for which she gets twenty to twenty-five cents per thousand. At night they are bunched, twenty-five in a bunch, and tied with a stout string. Frequently whole families go to a distant Galax ground and camp for a week or more in little shacks made of boards, picking leaves during the day and bunching them at night, to the accompaniment, perhaps, of the banjo or guitar, which has been brought along.

The leaves are taken to a local dealer who packs them between layers of damp moss in wooden boxes. They are then loaded on a wagon drawn by a pair of horses or mules and carried twenty miles or more down the mountain. If night overtakes them the driver halts in a wide space in the turnpike, builds a fire, produces his frying-pan and coffee pot and some provisions and after the inner man is refreshed the outer man lays him down to sleep in the wagon for the night. Arriving at the railway station, the leaves are shipped to wholesale dealers in the north to be distributed to various points



BED OF GALAX LEAVES IN JUNE

Note the thick luxuriant growth and flowers in the shape of white spikes.

his own again. He has time to pick up the chestnuts that are falling from the trees, and when October comes with its soft haze and its magical, witching atmosphere, then he—or mostly she—sallies forth in search of the Galax leaf which grows in great abundance in these high altitudes and is much in demand by northern florists.

It is a beautiful, glossy green, about three inches in diameter. It seems to love the society of the graceful laurel and the stately rhododendron. It has other charming neighbors which display their beauty in the spring time—the dogwood with its lovely white blossom and the azalea with its bright yellow or orange flowers, and not far away are oaks, chestnuts and hickory trees, yellow wood, sassafras and the tulip, generally known as the tulip tree.

But Mrs. Mountaineer does not always glean in such pleasant places as she goes “galackin.” She scrambles



NATIVE CHERRY OR BLACK BIRCH FOREST

The owner of the oil still stands with his hand on the tree in a jungle of rhododendron, kalmia, hemlock and chestnut oak.



in the United States and Canada. Before the war they were even sent to Europe. They may serve to lighten the gloom at the funeral of some departed New Englander or to heighten the festive appearance of some gay Christmas scene in Philadelphia, besides providing corn bread and coffee and perhaps gingham aprons and tobacco for the inmates of some mountain cabin.

In the higher altitudes grows a tree known as the cherry birch but which the mountain people call mahogany. From this comes a product which many of our readers have tasted, probably never guessing the source of the flavoring in their favorite lozenge. The bark is stripped from this birch when the sap is up and distilled in a wooden still with a metal bottom. This "sure 'nough" birch oil brings two dollars a pound and is used as a substitute for wintergreen. As a rule no attempt is made to utilize the wood of the denuded tree, so this is rather a wasteful method of acquiring a few extra dollars.

Large quantities of tan bark obtained from the hemlock and chestnut oak are also shipped from the mountain country.

I wonder whether folks ever feel any curiosity as to where the materials come from for drugs and medicines. Many of these, of course, are imported, but large quantities of medicinal herbs are gathered in the mountain lands of the south. The area producing these herbs has a much lower altitude than the birch tree heights, varying

facturers. McGuire and Company, of John City, Tennessee, have a price list of nearly two hundred medicinal roots and herbs, covering a territory that reaches as far



NEARER VIEW OF BIRCH OIL STILL AND OWNER

This shows waste bark at the foot of the tree and a jar of oil at the right.

south as Florida and as far west as Iowa and Michigan. These vary in price from cherry bark at two cents a pound to wild ginseng at eighteen dollars a pound.

It may be added that Mrs. Mountaineer does not forget the home needs when she is preparing her herbs, but in many localities keeps a generous supply on hand for cases of sickness. Butterfly root, or pleurisy root, as it is sometimes called, is one of her favorite remedies. "What is it good for?" I asked an old woman, a fellow passenger on a mail coach, and she told me of its virtues. "Good for a heap of things," was the answer, and went on to tell me it had a "powerful purty" blossom and she had made "many a dollar" gathering it.

I know a grandmother of the highlands who moves softly down the declining years, gently dispensing healing medicines among her own people. She knows the healing powers of the black snake root and sassafras bark, and it is well she does for she is many miles of rocky road from the nearest physician. If her little grandson has an attack of the "whelky hives," she straightway prepares a healing draught that may have as much potency as many of the powders and pills in the pharmacopoeia helping at the same time, to save the pocketbook from a state of collapse.

Still another tree product made by the thrifty mountain housewife is the willow basket. She gathers and peels the willow withes in the springtime when the bark is easily removed and weaves them at her leisure into baskets that are both useful and ornamental. Many of these are eagerly bought by tourists. In some places this industry is encouraged by welfare workers and the baskets are purchased from the makers in the mountains and sent to the cities in the north and middle west for sale.



BIRCH OIL STILL WITH "PROPRIETOR"

The shed covers the bark just stripped from trees and also the vat from which a trough and pipe conduct the heavy oil to the half gallon glass jar towards right of picture.

from one thousand to three thousand feet in height. Here many varieties of medicinal plants are found. They are gathered mostly by women and children and carefully prepared and taken to the local merchant and exchanged for merchandise. They are passed on to larger dealers in botanical drugs who dispose of them to the manu-



## NORWAY EXPORTS LUMBER FOR AGES AND

**E**DITORIAL opinion of the country is a unit in demanding action on a national forest policy. Here are editorials on the need of a National Forest policy. One is from Senator Arthur Capper's paper, the *Topeka Daily Capital*, and the other from the *Nashville Banner*. They both point to conditions in Europe. The question should be answered: if little Norway can export lumber for a thousand years, what about the United States?

*Topeka Daily Capital:* Newspapers generally are strong for "saving our forests" and reforestation, and ought to be. They consume annually in the United States wood pulp equal to 300,000 forest acres. Stretched on a single line the width of an ordinary newspaper the paper consumed would make a streamer reaching about half way from the earth to the sun.

There are some 2 million Americans, however, who are educated in behalf of reforestation and who are heedful how they destroy timber. These are the boys who got to the front in France. A good many of them have paid fines for injury done to trees in the war zone. And they all observed the French forestation system and witnessed the French method of conservation. A French forest, or a German, consists of alternating rows of trees in every stage of growth from the youngest seedling up to the mature trees. The latter are constantly being hewn down for lumber, but for every tree taken out a seedling is put in the ground, and as fast as the large timber is cut the next stage of timber becomes ready for the ax and saw. Witnessing this intelligent process of preserving French timber while using it, the average American service man obtained such a sense of conservation that he will be careful about wasting growing timber at home and will be strong for the program of the government and the American Forestry Association for reforestation in the United States.

Michigan's white, pine forests, once among the most splendid on the globe, have been ruthlessly destroyed, with no reforestation and consequently Michigan and other states about the Great Lakes which a short time ago shipped millions of tons of

white, pine to the South and West, are now paying heavy freight charges for lumber from Texas and Oregon to Michigan. Under the French or German system Michigan's forests would be intact today. The waste of American primeval forests has been an example of American pride in immediate and temporary "prosperity," which shows big for the time being, but an example also of its carelessness of generations to come after.

*Nashville Banner:* The United States Department of Commerce has recently issued a report on "Norway's Forests and Lumber Trade," in which it is shown that

throughout the year, are some of the reasons for its important place among lumber export countries, according to Trade Commissioner Axel Oxholm of the department of commerce, in his latest special report.

The lumber problems of Norway and the United States are much the same, says the trade commissioner in advancing the opinion that American lumbermen can learn much of interest from a study of what the Norwegians have done and are doing to "squeeze all waste out of the business and to make every effort count. He says the scientific utilization of so-called waste

products is largely responsible for the greater profit realized by the lumbermen of that country in international trade.

This shows in concrete form what is the result of scientific prosecution of the lumber business, and scientific conservation of the forests where the lumber grows.

With the continuation of present methods of criminal destruction in America, who is foolish enough to suppose, a single sawlog will be found in the United States outside a museum one thousand years hence.

*Providence Journal:* Americans are no less intelligent than the people of Europe; all that is necessary is to impress upon them the fact that unless something is done at once the country in a few years will

be unable to get lumber except at prohibitive prices and eventually cannot find it at any price.

The American Forestry Association is doing praiseworthy work in broadcasting the facts on our timber supply. But something more than publicity campaigning is needed. There must be action. The time to plant trees is now. The longer reforestation is postponed the greater will be the public loss. Too long we have been paying the penalty of waste and neglect.

*Rochester Democrat Chronicle:* When a \$10 bill is counterfeited the government expends prodigious effort and unlimited money to run down the counterfeiter, and if caught he is given a long sentence in prison. If he has had exceptional luck he may have

### THE ETERNAL FEMININE



—McGill, in the Atlanta Georgian.

Norway has been extensively engaged in the export lumber trade for over 1,000 years; that this is at present one of the country's most important industries, with nothing to indicate that the forests are about to be exhausted.

Two paragraphs from the report follow:

Norway started in the lumber export trade 600 years before Columbus landed in America. The industry has developed until today it is one of the country's most important sources of income. Adequate shipping facilities, careful attention to waste elimination and development of the planing mill industry to a remarkable degree of efficiency, supplemented by the country's position close to the principal markets of the world, with ice-free ports



# IS STILL AT IT; WHAT ABOUT UNITED STATES?

swindled the government out of a few thousand dollars. A man maliciously or through carelessness starts a forest fire which destroys a million dollars worth of timber, but not a thousandth part of the effort and expense, is devoted to capturing and punishing him that was given to the insignificant counterfeiter. That is just one instance in which a mighty improvement could be made. One who starts a forest fire through malice or carelessness—for there should be no difference, recognized in these crimes—ought to receive far greater punishment than a counterfeiter.

**Lansing Capital News:** The American public's duty to protect and scientifically develop forests and plant lands most suitable for tree growing is so evident, according to the American Forestry Association, that it seems a shame conservationists should be compelled to use the tremendous efforts they are compelled to employ for arousing public action.

The need of reforestation is not all talk. It is real, and more and more as the cost of wooden construction goes up, we realize the harm our forebears did in wanton waste in the cutting of our timber supply and their neglect to take means to replace this supply for the benefit of the generations which followed them.

It would seem that now is the time for the American people to quit worrying over whether the flapper is going to the eternal bow-wows and whether our neighbor is making booze in his cellar and settle some of the big questions which confront us. And the matter of reforestation is one of the biggest, if not actually the biggest, with which we are compelled to wrestle.

**Atlanta Constitution:** By our procrastination we are not only hazarding an important industry, but we are blindly ignoring nature's ability and willingness to reclothe millions of acres, valuable chiefly for their timber production capabilities, with forests that would be a perpetual source of revenue through the years to come.

**Chicago Tribune:** The need of timber conservation and reforestation in the United

States is generally admitted. It requires no argumentative support. What it does require is financial support. Men who own or control forests are eager to sell them or their product to enjoy the advantages which the money would bring. Men who do not own them do not care to plant them because a forest is a crop which requires fifty years or more to develop sufficiently to assure a profit and in this day we do not want to wait so long for our money.

That being the case, the business of establishing "town forests" which is advocated by the American Forestry Association, is of interest. A man grows old,

in better and more productive condition than it is today.

Some European cities have had town forests for centuries and are still enjoying a regular profit from them. Fitchburg, Mass., is said to have the first legally established town forest in the United States. Petersham follows. Still others will follow. The more the merrier. The plan takes away from forestry its chief objection—that the man who plants may never live to reap. The town which plants will live to reap. If enough towns plant they will save to the country one essential natural resource which is now in imminent danger of being totally destroyed.

The American Forestry Association wants to help every town get a start. Cook county, in a way, has a start in its forest preserves, though they are not designed primarily for timber producing purposes. We believe it will pay towns throughout the country, particularly those near barren soil, especially adapted to forestry, to look into the subject. It might even pay the government to help them.

**Dallas News:** Fires make unburned forests more precious to their owners, and therefore more costly to those of us who use their products. Ethically, it is probably the duty of the owners of the private forests to protect them from fires, but it is evident that they are under a smaller economic inducement to do so than are the buyers of lumber. It is the buyers of lumber who foot the damage done by forest fires.

**New York Herald:** The Southern States are leading the country in teaching forestry in the public schools. The Tennessee law, which is described in *American Forestry* for May, is very explicit and comprehensive in its provisions covering this subject.

It requires the curriculum of every public school in the State to provide for the study of forestry and plant life. The American people have long needed forestry education. Their country has suffered severely and is still suffering, from the lack of it. Education on the subject of the preservation of our timber resources is needed from the ground up, and the bedrock on which to lay the foundation of that education is in the public schools.

## GOING, GOING—



—Smith, for the Newspaper Enterprise Association.

perhaps dies, in fifty years. He cannot plant a tree or a grove with any probability of living to enjoy the timber which it will produce. A town, on the other hand, is young at 50 years and perhaps even at 100 or 200 years. A town can plant forests, tend them, and profit by them.

Petersham, a New England village, is trying the experiment. It has turned its 250 acre poor farm into a town forest. The pine stumpage of thirteen acres already has been sold for \$5,200. One hundred acres, now bare and unprofitable are to be planted to trees which will be ready to cut for timber in fifty or sixty years. It is estimated that \$50,000 can be taken from this forest in that time and leave it



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## ILLINOIS FORESTRY ASSOCIATION

The Illinois Forestry Association was organized on April 28th at the club rooms of the Lumbermen's Association of Chicago. Mr. Bolling Arthur Johnson, editor of the Lumber World Review, and Mr. William L. Hall were the moving spirits in bringing about this organization. A constitution similar to that drafted by Missouri was adopted and the following officers were elected: President, Dr. Henry C. Cowles, University of Chicago; First Vice President, Bolling Arthur Johnson editor Lumber World Review, Chicago; Second Vice President, Prof. J. C. Blair, Department of Horticulture, Urbana, Illinois; Secretary, Mr. S. F. D. Meffley, Secretary-Manager, Chicago Lumbermen's Association of Chicago; Treasurer, Mr. George A. Pope, of Chicago. The Association started with thirty-five charter members and this number will be increased as rapidly as possible.

## LIGHTNING CAUSES MANY FOREST FIRES

Lightning may not strike twice in the same place although it strikes with surprising regularity, as shown by forest fire statistics just compiled by the Forest Service. The figures show that during three of the past five years there were 201, 191 and 197 forest fires on the National Forests of Arizona and New Mexico due to lightning, although during the other two years, which were unusually dry, there were considerably more. This small variation of only 10 fires during the three years, indicates, according to Forest Officers, that lightning presents a fairly constant forest fire risk.

Forest Officers point out the fact that lightning does not always start forest fires since a great deal of it occurs during heavy showers, especially in July and August. Heavy electrical displays during such storms are responsible for many lightning-struck and often shattered trees. Fires rarely start at such times because of the heavy downpour of rain. During June and often the early part of July, however, there are dry electrical storms. The skies cloud up and there is a great deal of lightning and terrific thunder, although little or no rain falls. During such storms, many trees are struck by lightning and forest fires often result. It is not at all uncommon for three or four fires to start in one locality from storms of this kind and as high as 10 fires have been known to start.

Fortunate for the protection of the forests, the Forest Service fire organization always has sufficient warning of the coming of such fires. At the first clap of thunder, the entire organization is on its toes and horses are saddled and packed with provisions and tools. In fact, the rangers are ready to go as soon as fires are reported by the fire lookouts.

Experience has shown also that lightning fires do not at first spread as rapidly as those caused by man. Ordinarily they smolder for some time at the base of the tree struck, although when once the grass and debris under the tree catches fire, the spread is rapid. This is why the rangers are so anxious to get to the lightning fires quickly. Getting them while small not only saves a lot of forest from destruction but it also saves the rangers a good deal of work.

Man-caused forest fires, on the other hand, ordinarily spread more rapidly from the start and no warning as to when they will happen is given the rangers. These fires are, therefore more difficult to get to as quickly as lightning fires and often harder to control after arrival. On the other hand man-caused fires are generally in accessible country, along roads and trails where they can be easily reached, whereas lightning may strike anywhere, often in country difficult of access.

Studies have shown also that lightning

fires occur most frequently in certain zones. Parts of the National Forests of the Southwest have practically never had lightning fires while other localities have repeated fires from this cause. Such areas are being definitely located as quickly as sufficient information is gathered and the Forest Service fire organization is being constantly modified to take care of these emergencies.

## NORTH IDAHO'S FIRE HAZARD

THE fire hazard in the forests of North Idaho is worse than in any other portion of the United States, says C. C. Delavan, Fire Assistant on the Coeur d'Alene National Forest, in a lecture on forest fire protection which he recently gave to the students of the School of Forestry of the University of Idaho, at Moscow, Idaho.

Mr. Delavan has made a detailed investigation of the climatic factors affecting the fire hazard of this region in conjunction with Mr. J. A. Larsen, U. S. Forest Examiner in charge of the Priest River Experiment Station, at Priest River, Idaho. This study showed that although North Idaho's annual rainfall is much more abundant than that of many other sections of the country, its distribution is very uneven and there is practically none during the hot summer months of July and August. At the season when the rainfall is least, the wind movement is greatest and westerly in direction. These westerly winds, having lost their moisture in traversing the Cascades, and having been warmed up without reabsorbing moisture in crossing the deserts of central Washington, strike North Idaho forests with a powerful drying effect and observations actually show that the relative humidity in summer at Spokane is less than that of the Sahara desert. Thus we have the minimum of rainfall and humidity occurring when the wind movement, air temperature, sunshine and evaporation are greatest, a combination of factors which put the forests in a most inflammable condition.

Southern California has equally severe summer climatic conditions, but there the fire problem is not so serious because the spring rainfall is much less, the forests more open in character and the amount of inflammable material on the ground much less. In North Idaho, the abundant spring and fall rains give rise to a very dense type of forest which creates an abundance of inflammable material and enables the fires which occur to burn fiercely and spread rapidly.

In dealing with this most serious problem, Mr. Delavan pointed out the necessity for care and active co-operation on the part of the public to prevent fires from starting, to extinguish all fires discovered, no matter how small, and to enforce the state and federal fire laws.





## NEW ENGLAND COLONIAL STYLE

Illustrating the symmetry and stateliness of New England town houses of the period when Colonial architecture was at its height. This is another of the 17 architectural styles illustrated and discussed in "Good Houses," a book for home-builders interested in good design, efficient planning and thorough construction. "Good Houses" interprets these architectural styles which are the foundation of American building traditions, and which are adaptable to wood construction today. Send for your copy today.



Illustrating Good and Bad Bearing Post Footings

**I**F bearing posts under the girders in the basement of a house settle unduly the effect is apparent throughout the house. Cracks appear on plastered walls; doors become troublesome; floors become uneven. The bearing posts support a considerable amount of the weight of the house. Obviously they must be well supported or "rooted."

The footing shown on the right is too small in all its dimensions and is limited in its bearing power by its shape as well. Note how the post is set down into the concrete, a material which is always somewhat damp, thus needlessly subjecting the post to decay.

The greater sustaining power of the footing on the left is evident at a glance. Note its generous dimensions, its flat bearing surface, and note, too, how it extends above the cellar floor line, thus keeping the bearing post off the damp floor.

The success of concrete footings is dependent, too, upon the use of good materials in the right proportions, properly mixed.

Bearing post footings are just one of the many vital points in successful house building discussed in the booklet—"The High Cost of Cheap Construction," sent free on request to prospective home builders.

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Lumber for house building is of the same good quality as ever. Developments in manufacture are constantly improving it.

Good workmen and the better class of contractors still want to do an honest job; in fact they have been preaching the value of right construction in house building for years.

But conditions, largely beyond their control, today are forcing legitimate contractors—the men who know good materials and how to use them, who understand fire-stopping and other modern construction practices, and who see house construction in terms of dura-

bility and efficiency—to bid against construction practices that every honest craftsman condemns.

That is why we say, go to a legitimate contractor—one who takes pride in his craft and would rather deliver a good job at a fair profit than a poor job at an unfair profit.

You will find these men more and more using lumber of the Weyerhaeuser standard of quality—trade-marked with the manufacturer's pledge of personal responsibility.

**I**N "The High Cost of Cheap Construction," a book which will be mailed you on request, you will find the essentials of good construction necessary to successful house building; the basis for judging the manner in which your house is built; and the means of making the lumber you use in the construction of your house of even greater service. Ask also for "Good Houses."

Weyerhaeuser Forest Products are distributed through the established trade channels (to contractors and home builders through the retail lumber yards) by the Weyerhaeuser Sales Company, Spokane, Washington, with branch offices and representatives throughout the country.

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## PENNSYLVANIA'S FIRE OBSERVERS

Forest fire observers employed by the Pennsylvania Department of Forestry are now on duty, day and night, in small glass-enclosed cabins on the sixty-eight steel towers that have been erected on mountain tops in various parts of the State. They are guarding the State's timberlands, both privately-owned and State controlled, from destruction by fire.

The observers have been equipped with the most approved appliances and instruments for the location of fires. Maps have been prepared showing all the mountain peaks, streams, valleys, ravines, towns and other features that lie within the range of the watchmen's vision. In some cases all the territory within twenty miles of the tower is shown on the map, and it is under the constant observation of the forest guardians.

The maps are mounted on revolving tables in the cabins, and in the center of the map is an alidade, an instrument set on a pivot so that it may be swung in any direction and sighted on a fire. This instrument shows the exact location of the fire, with reference to topographic features on the map. Arrows indicate the direction and distance to principal cities in the East.

Towers, as far as practicable, have been placed so that they cover virtually all the forested area within a given region. Sometimes the outlying territories visible from nearby towers overlap, thereby providing increased protection against fires.

## NEW JERSEY NEWS NOTES

Alfred Gaskill, State Forester and director of the State Department of Conservation and Development of New Jersey, tendered his resignation to take effect July 1. Charles P. Wilber, of Trenton, Fire Warden, will probably become State Forester. Gaskill's retirement is due to ill health.

Gaskill studied forestry at Harvard University, the University of Munich and in organized forests of Europe. He entered the United States Forest Service in 1901 and on February 1, 1907, was engaged as State Forester. He was a director of the American Forestry Association for a number of years.

Practical forestry has been adopted by the East Orange Water Department for its 2,000-acre watershed in Essex County. Approximately 1,400 acres of the land is covered with natural timber and is being systematically cleaned of undesirable growth. Of the remaining area, 400 acres will be planted with forest trees at the rate of about 50 acres a year until all the idle land has been put to work. This spring 38,000 young trees of pine, spruce and black locust were set out. Over 50 acres were planted about 10 years ago and now have become fine stands of pine and spruce, some of the trees being more than 25 feet tall and 4 to 6 inches in diameter. A 40-acre tract on the watershed has been leased to the Boy Scouts of East Orange for a permanent camp.

A course in forestry, with special reference to the farm woodlot, is being given this year for the first time to agricultural students at Rutgers College, New Brunswick, N. J., by foresters from the State Department of Conservation and Development. This course will consist of four lectures and a field trip.

"There is no need of a forestry school in New Jersey," said C. P. Wilber, state forester, "but forestry is fast being recognized as a part of present day farming."

A new 60-foot steel lookout tower, which will guard one of the largest wilderness areas in New Jersey, was recently erected by the State Forest Fire Service near Millville. Two more towers, one at Lakewood and one near Blairstown, will soon be opened.

## Can You Afford To Buy Books?

The American Forestry Association will give Books on Forestry, Trees, etc., or on any subject, for a little of your spare time.

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**PULPWOOD IN PENNSYLVANIA**

The Department of Forestry has just completed a survey of the pulpwood situation in Pennsylvania. This study shows which used 320,076 cords of wood during that there are 13 pulp mills in the State, 1921. This was a decrease of almost 35 per cent from the 1920 consumption, when 489,211 cords were consumed.

The pulp and paper business is one of the most important of Pennsylvania industries that depends upon the forest for its raw material. More than \$50,000,000 are invested in the pulp mills. Last year they employed 7,000 people, paid out \$10,000,000 in wages and turned out products valued at \$20,000,000.

The principal kinds of wood used by the mills are 99,559 cords of spruce, 63,355 cords of yellow pine, 40,263 cords of poplar, 38,753 cords of beech, birch and maple. The remainder was made up of Balsam fir, yellow poplar, hemlock, gum and sycamore.

The most striking feature of the pulpwood situation is the fact that more than 72% of the wood used in the pulp mills comes from outside of the State and less than 28% comes from within the State. Three of the pulp companies import every stick of wood they use, 8 of the 13 companies import over 60% of their wood, while not a single company relies entirely upon home-grown wood. This makes the pulpwood situation serious, for the Pennsylvania mills cannot depend indefinitely on Canada and other neighboring states for pulpwood. These outside supplies are being depleted. There is only one practical way to bring relief, and that is to grow the wood on the hills of Pennsylvania.

The Department's investigation shows that one of the most promising signs of the Pennsylvania pulpwood situation is the use of mill waste. Wood that was formerly discarded is now used on an increasing scale. Mill waste, slabwood and mountain wood are finding their way into the mills. During 1921 a total of almost 43,000 cords of this kind of material was used. It made up more than 13% of the total wood consumption of all the mills. Among the material used were old logs that had been lying in the woods for twenty years.

Experts of the Department of Forestry estimate that 500,000 acres of well-managed forest land will be required to maintain the pulp mills of Pennsylvania, and supply them continuously with wood. The pulp companies now own 86,000 acres of forest land in Pennsylvania. If this area is handled properly it will produce a large quantity of pulpwood. The State Forests, which now exceed 1,126,000 acres, will also supply considerable material and the privately owned forest land will make up the rest. These three sources of supply will go a long way toward supplying wood

needs of the Pennsylvania pulp mills and help maintain this important wood-using industry.

**ORNAMENTAL TREES**

Evergreen trees form one of the most effective classes of ornamental plants. They can not be used as extensively as deciduous trees as they are more exacting in their requirements of soil, exposure, etc., and their very individuality is often a reason for planting them sparingly, according to Prof. Alan F. Arnold, of the New York State College of Forestry. For many purposes, however, they are invaluable, but the owners of homes generally know little of their ornamental possibilities. A great deal of the planting of evergreens that is done on small lots particularly, is attended with unfortunate results. This is due largely to a lack of knowledge as to what trees are most likely to do well.

**SAVING THE TREES OF BROOKLYN**

HOW to save the trees of Brooklyn by careful forestry practice is a problem which has been submitted to the New York State College of Forestry at Syracuse by prominent Brooklyn men as the result of a street tree investigation made by the head of the department of City Forestry at the State College.

It is suggested that an area of Brooklyn streets be taken, planted and maintained as a joint experimental problem for the period of at least ten years by the State College of Forestry and the Brooklyn Botanic Garden, carried out by funds supplied by interested citizens of Brooklyn. It is said that the trees of Central Park have been in danger of dying out entirely and the Brooklyn proposition is the result partly of the College's forestry work on these trees.

**SLASH PINE REVENUE**

Slash pine grows rapidly and yields revenue in turpentine gum at an early age while it is growing into timber, says the United States Department of Agriculture in Farmers' Bulletin 1256. Slash Pine, prepared by Wilbur R. Mattoon, forest examiner, and now ready for distribution. Well-stocked stands of young growth, after making liberal deductions for the cost of taxes and fire-protection during the period of growth, show profits of 6 to 12 per cent compound interest on an investment of \$5 an acre. A large number of owners in the South are deriving good profits from low-priced lands by using them for the production of timber and grazing of stock. If fire is excluded, the range, yields more of the tender annual grasses and legumes which are more nutritious than the hardy perennials like, wire and broom-sedge grasses, and the influence of the protective soil cover stimulates tree growth to a marked degree.

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## BOOK REVIEWS

"Timber," by Harold Titus (Small-Maynard), Boston, Price \$1.75.

In Michigan the need for forestry is very great but the task of getting people sufficiently interested to do anything about it is an exceedingly discouraging one. There has recently appeared, however, a book which carries a big forestry message to the people of Michigan and which should be tremendously helpful in advancing the cause of forestry in that State.

The name of the book is "Timber." It is a novel and the story is laid in Michigan's great "cut-overs." The author has distinguished himself by writing an intensely interesting and human story and by weaving into it the true essentials of forestry in a simple and understandable way.

"Timber" is a distinct contribution to the cause of forestry in the United States. The fact that the story is woven into conditions in Michigan does not detract from the broad application of its lesson. It will carry the gospel of forestry wherever it is read and needless to say, it will be read by the public. The same cannot be said of much of our other forestry literature, which unfortunately is in government re-

ports, convention proceedings and professional journals. We need more novels like "Timber."

*Government Forest Work*, United States Department of Agriculture. Department Circular 211.

This illustrated pamphlet of 47 pages is a convenient pocket reference book, covering, as the name implies, the forest work of the Federal Government. It is prepared for free distribution and will supply the ever increasing demand of those who wish to be furnished with authentic information in regard to the promotion of scientific forestry which is coming to be recognized as a matter of vital concern to every American. Scientific forestry was first begun in the United States in the Department of Agriculture and this work has ever since been carried on by the Forest Service, of the Department of Agriculture, in co-operation with other bureaus of the Department. The Bureau of Public Roads assists in opening up ways for more efficient fire protection, and the Bureaus of Entomology and Plant Industry aid in protecting the forests against insect enemies

and disease. The Forest Service also co-operates with the Bureau of Animal Industry, the Weather Bureau, Biological Survey and other federal agricultural agencies.

Efficient administration of the 156 million acres included in the National Forests for the greatest benefit and service to the people involves many activities besides the growing of trees. The keynote of the National Forest administration is service, and the demands of the persons who wish to seek rest and recreation within the forest boundaries are recognized as well as the demands of the lumberman, the settler, and the stockman. These various demands on National Forest resources are oftentimes conflicting and difficult to settle, but the guiding principle of the highest use is followed. For the campers, recreation areas are set aside, and those who wish to build summer homes and return to the same place each year may lease sites for a very reasonable sum.

The Booklet is for free distribution and may be obtained from any forest supervisor and the District Forester's office in Portland, Oregon.

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## STATE NOTES

### FOREST PRODUCTS IN TEXAS

After house construction the most important user of forest products in Texas is the oil industry, according to a table just issued by the State Department of Forestry and the Texas Forestry Association. For dwellings the annual consumption of forest products in this state is estimated at 325,000,000 feet; for the oil industry it is 315,000,000 feet. There are said to be 13,000 producing wells in Texas and about 30,000 feet of lumber are required for each well.

It is estimated that the annual consumption of forest products for all purposes in the state is 1,900,000,000 feet.

### \$165,000 FOR NEVADA ROADS

Expenditures totaling \$166,000 of National Forest Highway funds for the construction and repair of 24 miles of roads in Nevada have just received the approval of Secretary of Agriculture Wallace. This money was made available for roads serving the National Forests and for roads within or adjacent to the forests, which are of primary importance to States, counties and communities. The amount approved by the Secretary will be allotted to two roads in the Toiyabe National Forest in Lander County and one in the Nevada National Forest in White Pine County.

### INSECT ATTACKS BIRCHES

Birch trees in certain sections of Maine are being attacked by an insect which defoliates them, and it has been identified as the buccalatrix, an insect about a quarter of an inch long, which feeds with the utmost abandon on the leaves of the birch. The remedy for this pest is announced as arsenate of lead spray, to be done in the spring or by the first of July.

Deputy Forest Commissioner Neil L. Violette, asked about the damage, if any done by this pest, said that the presence of the insect in certain sections had been reported to the department, but that the only damage so far known to have been done by it was the defoliation of the trees. That, of course, makes an unsightly appearance, but has not, so far as known, injured the trees themselves. It is understood that a parasite is making great inroads on the ranks of the insect and it is hoped that the pest will be thus exterminated.

### PULPWOOD CONSUMPTION BREAKS RECORD

The 1920 consumption of pulpwood in California, Oregon and Washington exceeded by 23,000 cords, or 7.4 per cent the greatest previous record, which was in 1919. Similarly the 1919 consumption of pulpwood exceeded by 18.6 per cent that of 1917, the previous record. The 1919 production of wood pulp fell short of the 1917 production by nearly 3 per cent, while the 1920 production exceeded the 1917 record by 14 per cent.

This statement is based upon complete figures published jointly by the Bureau of the Census for 1919, and the Forest Service of the United States Department of Agriculture, in co-operation with the American Paper and Pulp Association, for 1920.

### \$61,000 FOR BLACK HILLS ROAD

Secretary of Agriculture Wallace has approved the expenditure of \$61,000 of National Forest Highway Funds for road building on the Deadwood Hot Springs Highway in Pennington County, South Dakota. This money was made available for roads serving the National Forests and for roads within and adjacent to the forests, which are of primary importance to States, counties and communities. The section to be constructed lies between Pactola and Merritt in the Black Hills National Forest and will cover a distance of 6.6 miles.



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## FOREST SURVEY IN ILLINOIS

The State Natural History Survey of Illinois, a Division of the Department of Registration and Education has now in active progress a systematic survey of the forest areas of the state, carried on by a party of trained foresters, who are making careful counts and measurements of the different kinds of trees on sample strips or plots to get the data for a computation, for each kind of trees, of the number of board feet of merchantable timber per acre, and the number of cubic feet per acre, suitable for railroad ties, mine props, fire wood, etc. The information obtained will be published,—together with general descriptions illustrated by photographs and maps, of the kinds and condition of the various forest areas,—in the bulletin of the State Natural History Survey. Other studies are being made of the rate of growth of the different species of trees on different soils and under different conditions as to subsoil, slope, and drainage, the whole investigation being in the nature of a stock-taking of Illinois woodlands for a determination of their value as public and private resources.

Statistics are also being collected of the consumption of timber by the different wood-using industries of the state, the local supplies available for each, and the time which these will last at present rates of use.

The forest survey will also report upon the kinds of management necessary to maintain production, the most important of which is evidently protection against damage by fire. These studies will presently be extended to deforested areas in order that normal agricultural lands may be clearly distinguished from those which should be kept in forest or restocked with trees as the most profitable use to which they can be put. The survey party is now at work in the forested area of extreme southern Illinois, but will later extend its operations along the Mississippi bluffs and over the broken lands bordering the more important streams within the state.

## PLAYGROUND FOR BUTTE

The first law authorizing the Secretary of Agriculture to co-operate with a municipality in the development of playground areas was enacted on April 28, when President Harding signed a bill recently passed by Congress empowering the Secretary to set aside for the recreational development of Butte, Montana, a tract within the Deerlodge National Forest. According to a statement issued by the Forest Service of the United States Department of Agriculture the area is desired by the City of Butte for a playground. The city has been reluctant to construct improvements because National Forest lands are freely open to mineral prospecting and the location of claims on the proposed area would destroy its value for outdoor enjoyment.

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## GLACED GRASSHOPPERS

"Very much unheard of before," one of the glacier experts of the Geological Survey said skeptically when recently shown reports and photographs of the Grasshopper Glacier which lies just outside of the northeast corner of the Yellowstone National Park.

However, the glacier is there for any one to see. Imbedded in its ice there are thousands of strata of grasshoppers of an extinct species, which must have been flying over the mountains in living clouds when they were caught in snowstorms and killed, later to be preserved for countless years in solid ice.

The Glacier which lies in great cirques at the head of Rosebud River is comparable to any of the big glaciers of the Rockies. It is a safe glacier, having few crevices. The view from the glacier is sensational due to the towering sawtooth mountains about it, and the yawning canyons of the Rosebud below. The trip to this glacier is worth while in every respect and is best reached from the Yellowstone Park as a side trip from Tower Falls Junction. Motorists can drive to Cooke City from which point horses and guides for the glacier trip can be secured.

## \$367,000 FOR STATE ROADS

Expenditures totaling \$367,000 of National Forest Highway funds for the construction of 64 miles of highway in New Mexico have just been approved by Secretary of Agriculture Wallace. This money was made available for roads serving the National Forests and for roads within or adjacent to the forests, which are of primary importance to States, counties and communities.

## ATTENTION, FORESTERS

AMERICAN FORESTRY will print, free of charge in this column, advertisements of foresters wanting positions, or of persons having employment to offer foresters. This privilege is also extended to foresters, lumbermen and woodsmen who want positions, or to persons having employment to offer such foresters, lumbermen or woodsmen.

## POSITIONS WANTED

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**FORESTRY COLLEGE GRADUATE**, 22, single, willing and capable, wants work with a forest products company or a research party. Not particular which part of world duties will lead to. Address Box 4000, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (5-7-22)

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**FORESTER**, University Graduate; 28 years of age; ex-service man; several years' experience in the paper industry as an executive, also sales experience, desires position. Best references. Address Box 4040, care AMERICAN FORESTRY, Washington, D. C. (7-9-22)

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## Bryant's Logging

The Principles and General Methods of Operation in the United States. By Ralph Clement Bryant, F.E., M.A., Manufacturers' Association, Professor of Lumbering, Yale University, 590 pages, 6 by 9. 133 figures. Cloth net, \$4.50

A discussion at length of the chief facilities and methods for the movement of the timber from stump to manufacturing plant, especially logging railroads.

## MICHIGAN AGRICULTURAL COLLEGE FORESTRY SUMMER CAMP

The Forestry Department at Michigan Agricultural College announces that its annual summer camp for junior foresters will be held on the forest lands of the Antrim Iron Company, a company operating a large saw mill and chemical wood plant in Kalkaska County, Michigan, starting the 26th of June and lasting for four weeks. This camp is an annual institution of the Forestry Department. The students live in a logging camp and put in old fashion lumberjack hours in the woods learning the business of timber cruising, land surveying and logging from the ground up. A lumber camp cook provides them with simple but abundant fare of the quality that is provided for lumberjacks.

## A CONSERVATION COUNCIL

A State Conservation Council for Pennsylvania was organized March 30-31, at State College, Pennsylvania, by twenty-one State and nine county organizations interested in conservation, representing over 275,000 people. The object of this Conservation Council is to outline a conservation policy for the State, to correlate the efforts of the many State and county wide organizations interested in various phases of conservation and to secure uniformity of action for the support of such measures as are deemed important for the advancement of conservation.

Among the organizations represented at the meeting were: The Pennsylvania Branch of the Wild Flower Preservation Society, Pennsylvania Forestry Association, United Sportsmen of Pennsylvania, State Chamber of Commerce, Wild Life League, Pennsylvania State Conservation Association, Pennsylvania State Sportsmen Association, Pennsylvania Alpine Club, State Grange, State Federation of Pennsylvania Women, Society of Farm Women of Pennsylvania, the Kiwanis Clubs, Boy Scouts of America, Botanical Society of Western Pennsylvania, the Pennsylvania State Fish and Game Protective Association, Pennsylvania Branch, Society of American Foresters, Rotary Clubs, Centre County Conservation Association, Columbia County Conservation Association, Berks County Conservation Association, York County Conservation Association, Union and Snyder County Game, Fish and Forestry Association, Anthracite Forest Protective Association, Huntingdon County Conservation Association, Lycoming County Forest Protective Association, Pocono Forestry Association, Blair County Game, Fish and Forestry Association, Clinton County Fishing and Hunting Association, Bucks County Fish, Game and Forestry Association, and Montgomery County Fish, Game and Forestry Association.

A Constitution was adopted which gives each State-wide organization three representatives on the Conservation Council and

each county one representative. The county representative is to be elected by a County Conservation Federation of all organizations in a county interested in conservation. The Conservation Council will thus be composed of about 130 representatives. The organization members are to retain their own individuality and traditions, but to combine their efforts through the Conservation Council for developing conservation along the lines of hunting, fishing, forestry, wild flowers, song birds, recreation and education in conservation.

Officers were elected as follows: President, Dean R. L. Watts, of the School of Agriculture, State College, Pa.; vice presidents, Miss Florence Dibert, Johnstown, Pa., chairman of the Conservation Section of the State Federation of Women; R. L. Brown, Ellwood City, Pa., president of the Wild Life League of Pennsylvania; David Prichard, Scranton, Pa., president of the United Sportsmen of Pennsylvania; secretary, Prof. J. A. Ferguson, State College, Pa., secretary Pennsylvania Branch, Society of American Foresters; treasurer, M. I. McCreight, Dubois, Pennsylvania Conservation Association.

The meetings were addressed by A. B. Farquhar, of York, Pa.; Dr. J. T. Rothrock, West Chester, Pa. Hon. R. Y. Stuart, State Forestry Commissioner; Hon. N. R. Buller, State Commissioner of Fisheries, and Hon. Seth Gordon, Secretary of the Board of State Game Commissioners, outlined the future policies of their departments, which were adopted by the Conservation Council.

Resolutions were adopted in favor of the purchase of land by the United States Government for the creation of National Forests in the East; bonding the State for \$25,000,000 for the purchase of wild land of the State; appropriation of \$1,000,000 for fire protection in the State; against the proposal to unite the Department of Forestry, Fish, Game and Water under one commission; against the proposal to turn license money from hunters and fishermen into the general treasury of the State, and in favor of the United States Government in cooperation with the States carrying on investigations to stop pollution of our rivers and streams.

## DECAY OF BUILDING TIMBERS

Fungi that attacks timbers in buildings cause enormous losses every year, particularly in textile mills, paper mills and canning factories, here moisture and temperature conditions are unusually favorable to their growth. The problem has become more serious with the increasing use of woods of poorer quality, and the United States Department of Agriculture has taken it up with a view to reducing the losses. Department Bulletin 1053, Studies of Certain Fungi of Economic Importance in the Decay of Building Timbers, by Walter H. Snell, has just been issued.



# AMERICAN FORESTRY 449

THE MAGAZINE OF THE AMERICAN FORESTRY ASSOCIATION

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## CHANGE OF ADDRESS

A request for change of address must reach us at least thirty days before the date of the issue with which it is to take effect.  
Be sure to give your old address as well as the new one.

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## "THE HALL OF FAME FOR TREES"



THE TWIN COPPER BEECHES IN GEORGETOWN CONVENT GROUNDS

Magnificent specimens of one of our most beautiful trees, and looking like one large tree with a crown like an immense copper dome. They must have been in their prime during Civil War days and bear many marks, dates and initials. Their respective circumferences are 13 and 11 feet. They stand in the grounds of Georgetown Convent at Washington, D. C., and have been nominated for the Hall of Fame by Mrs. Mary A. Easby-Smith, historian of the convent alumnae. (See page 495.)



## ALASKA'S INTERIOR FORESTS

By John D. Guthrie

THE forests of interior Alaska are enormous in extent. Their total area has been estimated all the way from 80 millions up to 150 million acres. They are on the unreserved, public domain of the United States, and so far have been given little or no administration, or any protection from fire. Although the present commercial value of this large area of Government timberland is comparatively small, the value of these forests in the future development of this immense region is hardly possible to measure. Alaska as yet has not even the full status of a territory, and thus the title to approximately 99 per cent of its immense area still remains in Federal ownership. She has not yet been the recipient of large grants of Government land as was the case with all the public-land States and Territories. In the consideration of a forest policy for the nation this immense Government-owned forest area should not be overlooked. It is the Government's business to protect these lands from uncontrolled forest fires against the time when they will be vitally needed, not for use in the States, but in the development of both mineral and agricultural lands of the interior, which development is sure to come.

The interior of Alaska is still largely an undiscovered country. Exact data concerning the forests of the great interior basins are not yet available. Here is an area comprising not less than 300,000 square miles, or 192,000,000 acres, of which only a few townships have been surveyed. From the time of the Russians many men have passed over portions of this immense area, but they all

have been interested mostly in the mineral wealth of the country, what was in the ground, and not with what grew on the surface. Men have gone into the heart of Alaska primarily for fur and for gold, not for timber. The records they have made do not deal with the acreages of forest land, the geographic range of tree growth, the total stand of timber, the loss by forest fires, or the area burned over—things which a forester would be most interested in; these therefore must be approximations.

There are, however, certain broad statements that may be made concerning the interior forests of Alaska which may not be disputed. These are that there is a very extensive area bearing forest, much of which is of saw timber size; that the tree species have been pretty accurately identified; that the forest area has been very extensively

burned over; that the forest has played a very important part in the development of the country; and lastly, that apparently it has not been of very much interest to anyone whether the forests were burned or not.

Of Alaska's coast forests approximately 90 per cent is included in two National Forests and these have



BIRCH AND ASPEN FOREST NEAR EAGLE, ON THE YUKON

The interior forests are for the most part of the woodland type and comparable to the forests of northern Maine and eastern Canada, both as to species and mixture.

been under administration since 1902. Her two National Forests have been self-supporting practically from the date of their transfer to the Forest Service in 1905. These coast forests will undoubtedly become within a comparatively short time an important factor in exports of pulp and paper to the United States. It is not believed however that the interior forests will furnish products that will ever prove feasible or practicable for export outside of the Territory of Alaska, nor would such a



movement be advisable, for it is believed that every acre of the interior timber will be needed for internal development which must come to the interior basins of Alaska's great river systems.

The forests of interior Alaska are practically confined to the great basins of the Yukon and Kuskokwim Rivers. Some idea of the size of these areas may be judged when it is stated that the drainage basin of the Yukon, the fifth river in size in North America, embraces 330,000 square miles (of which slightly less than one-half is within the Territory), while that of the Kuskokwim covers 50,000 square miles. It is probably not generally known that the United States owns forests within the Arctic Circle, yet the range of tree growth in central Alaska extends up the Chandlar and tributaries of the Porcupine Rivers, or 2 degrees inside the Arctic Circle.

The interior forests are for the most part of the woodland type and are fairly comparable to the forests of northern Maine and eastern Canada, both as to species and mixture, though inferior as to quality. Of the estimated 150,000,000 acres of interior forests, there are probably 75,000,000 acres which bear timber of sufficient size and quality to make it of extreme value for cordwood, sawlogs, boat building, mining operations, farm use, and other needs of a pioneer region.

The principal tree species represented in the interior forests are white spruce, white birch, balsam poplar, black cottonwood, aspen, black spruce, and tamarack or larch. Of the above species the white spruce is by far the most important tree. White birch is widely scattered and comprises a large percentage of practically all stands. Black spruce, while fairly abundant is confined largely to muskegs and swampy areas and is of little value. Poplar and cottonwood are abundant along streams while aspen with white birch usually forms the tree cover at timber line.

The stand of the interior forests varies greatly with

the exposure and the elevation above sea level. Broadly speaking, the valley floors of the Yukon and its main tributaries, as well as the Kuskokwim, the Copper, the Chulitna and the Susitna Rivers are timbered with fairly heavy stands of white spruce, white birch, and cottonwood. As one leaves the valley floor and begins to go up the slopes, the forest becomes scattered and the trees become shorter and more limby, until an average elevation of some 2,000 feet above sea level is reached

when tree growth ceases. There is forest practically along the entire line of the Government railroad from Anchorage to Fairbanks (353 miles), except immediately in Broad Pass and except where the timber has been entirely destroyed by extensive fires. One authority on Alaska conditions estimates that there are 8,600 square miles or 5,504,000 acres of merchantable saw timber in interior Alaska, and that this would average not less than 5,000 board feet per acre. On this estimate there would therefore be a total of 27,520,000,000 feet board measure of merchantable saw-timber; the above estimates do not include timber suitable only for fuel and mining purposes, such as stulls and lagging.

Timber line in the Yukon basin is placed about 2,500 feet above sea level. There is a scarcity of vegetation on the high ridges while in some of the larger valleys of tributaries to Tanana River the heaviest stands of timber are found. A striking feature of the range of tree growth is found in the contrast between the upper reaches of tributaries of the Yukon

and those of the Tanana. Those of the Yukon, for the most part, are relatively bare, while those of the Tanana are well timbered from their heads.

The climate is characterized by long, cold winters and short, hot summers with almost continuous sunlight, and with a rainfall averaging less than 15 inches. As is to be expected from a region in this latitude all tree growth is slow. A maximum temperature of 95 degrees Fahrenheit has been recorded in the Yukon basin, and



THEY GRADUALLY DISAPPEAR

The forests along the valleys run out as the slopes are ascended, the heavy stands of white spruce, white birch and cottonwood becoming scattered and the trees shorter and more limby until at an average of 2000 feet above sea level, tree growth practically ceases. These mountains are a part of the Wrangell Range.



on specially favored sites annual plant life becomes almost tropical during the long days of the Arctic summer. Actual measurements of tree growth, however, show a far more rapid rate of growth than one would expect, a growth that compares very favorably with similar tree species in the northeastern portions of the United States.

The bulk of the timber cut in interior Alaska is for firewood, probably several times as much timber being used each year for fuel as is used for lumber. Wood has furnished the country with heat, light and power, though now native coal (largely lignite) is coming to be used. The completion of the Government railroad which traverses a country rich in coal deposits is responsible for this. The interior forests have supplied several sawmills with logs. Spruce has been sawed for many years at the several small mills in the interior. The chief uses of lumber from these mills has been for flume and sluice boxes, boat building, and houses and business buildings in the towns. The portion of the Government railroad from Anchorage to Fairbanks, a distance of some 353 miles, has been laid on ties cut from the forests along the right of way. The local timber has also been used almost entirely for camps and general construction work on the railroad, most of the heavy timber for temporary bridges, however, having been shipped in from Puget Sound.

Even with the most careful handling the forests of in-



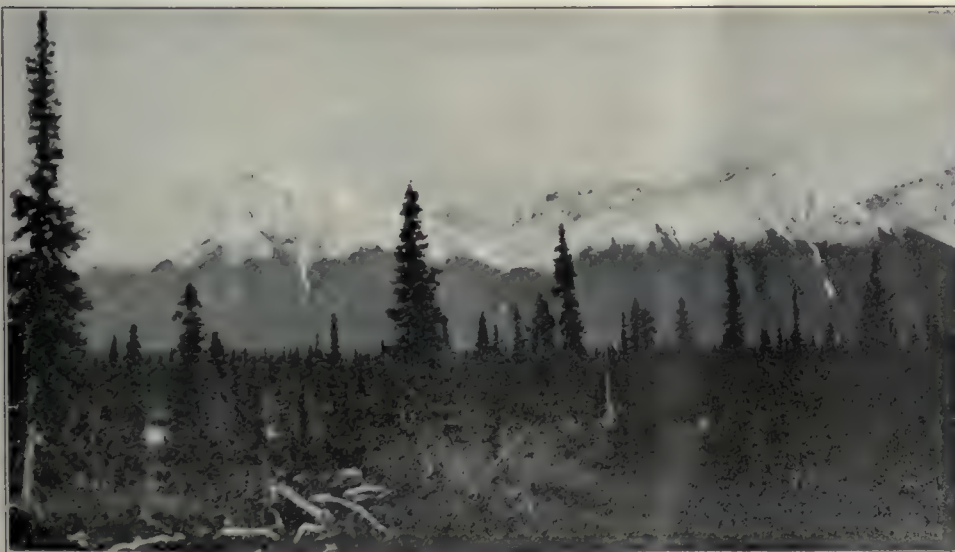
SPRUCE FLAT ALONG NENANA RIVER

This is north of Healy, near the line of the Government railroad, now completed. There is forest along nearly the entire line of this road from Anchorage to Fairbanks—353 miles.

terior Alaska will probably not fully supply the future needs of the country. Alaska is a country of vast distances and a scanty population, and wood, always an essential product everywhere in a new country, will be needed in enormous quantities. The availability of a timber supply close at hand will make sure the establishment and building up of the chief industries of the interior country, mining and agriculture. Interior Alaska has a climate not dissimilar to that of the Dakotas and with its agricultural possibilities, already proven at Fairbanks and in the Mantanuska Valley, there will come a population commensurate with her resources. In the Tanana Valley alone there are estimated to be 1,000 square miles of land suitable for agriculture.

Owing largely to uncontrolled forest fires, the pinch for timber that is readily accessible is being felt already in the Fairbanks region. Timber suitable for boat and building purposes has to be rafted from 25 to 60 miles, cordwood of second-growth birch being more accessible. The economic importance of Alaska's interior forests must grow with the development of her mining and agricultural industries.

Even if it were never to be needed for local development, owing to its smaller size and relatively inferior quality, the timber of the interior forests can never compete as lumber with either the large timber of Alaska's coast forests or with that from the Pacific Coast



TYPICAL OF FOREST CONDITIONS

Open forest of white spruce in the Broad Pass region. Small lakes, of crystal clearness and beauty are found in this region. It is a vital necessity that the Government take measures to protect—first from fire—the interior forests of Alaska which are destined to play so important a part in her commercial and economic development.





PAXSON'S ROAD HOUSE

Comfortable road houses are found along the Richardson Trail, which is the road of 320 miles from Chitina, on the Copper River railroad to Fairbanks.

States. It has been seriously urged that the interior forests present great opportunities for an export trade in the manufacture of pulp, or for the location of wood-using industries, furniture plants, or other minor forest products. The species composing the interior forests are admirably suited for pulp, and are the same species that have been used by eastern pulp and paper makers for many years. However, the cost of transportation, the enormous area of forest land involved, and the absence of very large stands of timber in compact bodies, would make the plan of utilization of these forests for pulp export entirely too chimerical.

Alaska's interior forests are found along her stream valleys where they will be accessible to the mineral (quartz) development in her hills and mountains and handy for use in bringing under cultivation her potential farming lands. A large area of forest along the valleys will undoubtedly be either destroyed by placer mining operations or be cleared for agriculture, since the best tree growth occurs on the best agricultural soil. This will reduce very materially the total forest area, thus necessitating the safeguarding and protection from needless burning of the remaining forest lands.

It is believed that the interior forests of Alaska are hardly holding their own against the annual loss in volume due to uncontrolled fires. That 25 million acres of these forests have been burned over seems a not unreasonable estimate. Millions of acres have been burned over two or three times leaving an utter waste. It has been said that ten times as much timber has been burned in the Fairbanks region as has been cut for fuel or lumber. Former Chief Forester Graves estimated in 1915, after a trip through central Alaska, that in the previous 20 years forest fires had burned over an average of one million acres per year in interior Alaska, and that in

1915 alone several million acres were burned. Travelers through the interior during the summer months are certain to see numerous forest fires burning and find no attempt being made to control or extinguish them.

As typical of the situation, the writer saw a forest fire north of Copper Center on September 3, 1920, that had covered several hundred acres and that was said to have been burning since June; between Chitina and Fairbanks, a distance of some 320 miles, he saw on this same trip not less than eight forest fires burning along the Richardson Trail. Passengers on the new Government railroad during the dry season report a string of fires starting from sparks from the locomotives.

There is no agency, governmental, territorial or private, that realizes its responsibility for the protection of the interior forests from fire. Fires are not fought unless they threaten someone's private property. In a region with less than 15 inches of rainfall and under practically 20 hours of sunlight each day for four months each summer, the interior forests become very inflammable,



CONSTRUCTION WORK UNDER WAY

This is a clearing along the Government railroad right of way, showing one of the construction camps.



and a spark in the dry moss may start a fire that may cover thousands of acres, before burning itself out on the edge of a muskeg or being put out by the fall rains.

To meet the future demand for wood and in order to remedy the damage done by fire it has been seriously suggested that the Government should undertake replanting of the burned areas. Artificial reforestation of denuded areas is an expensive undertaking in the States where labor costs are lower, transportation available and climatic factors most favorable for tree growth. In the interior of Alaska, with short, hot summer seasons and long, cold winters, and with labor scarce and high, artificial reforestation is entirely impracticable.

The sure way to provide a fuel and lumber supply for interior Alaska's present and future needs is to keep fire out of the forests that nature has already grown there. Under Alaskan conditions the best way to grow forests is by preventing forest fires.

As a national duty it is imperative for the Federal Government, the owner of the lands involved, in cooperation with the Territory of Alaska and its residents, not only to stop forest fires but to keep fire out of the interior forests in the future. The prevention of forest fires is therefore essential as well as the suppression of fires that start. With a sparse

population, immense distances to cover, with trails and roads few and far between, the fighting of forest fires after they start is an extremely difficult matter, and in many cases impossible; the best way to fight forest fires in interior Alaska is not to let them start.

In suggesting any plan for the protection from fire of the forests of interior Alaska certain fundamental facts of Alaskan conditions and human nature must be recognized. Briefly, these are:

1. The interior of Alaska has a sparse and scattered population, living largely under pioneer conditions and with the pioneer's point of view regarding natural resources.

2. Such being the case the protection of the forests from fire must come through an awakened public sentiment. The pioneer population must be brought to realize that it is to their immediate interest, as well as to succeeding generations, to use but also to protect from

criminal neglect and waste a natural resource without which prosperity can not long remain in any country.

3. In short, the prevention of forest fires must be driven home. As a practical problem the suppression of fires after they are started is secondary for the interior population is insufficient or too widely scattered to provide an absolutely effective suppression force in the ordinary case.

4. To remedy the situation and to fix clearly the responsibility there should be on the ground a small protective organization; this to consist of a forest supervisor or fire warden with a force of forest rangers and patrolmen, in touch with public sentiment, to the end that the need for forest protection may be brought home. The mere presence of such an organization in the country will help tremendously in the prevention of fire.

5. The duties of this organization should be essentially fire prevention and fire patrol, rather than fire suppression, though they should extinguish all fires in their re-

spective districts wherever it is possible to do so. Under interior Alaska conditions it is not believed that it is possible to secure a sufficient force of men to put out all forest fires that start; it is believed entirely possible and feasible to arouse public sentiment to the point where the large majority



AT THE NORTH END OF BROAD PASS

Smoke from a forest fire burning along the Government railroad right of way is seen in the distance. It is believed that the interior forests of Alaska are hardly holding their own against the annual loss due to uncontrolled fires.

of the population will do their utmost to prevent forest fires. No plan of protection can succeed without the support of the local people.

6. Full and hearty cooperation in the work of bringing forest fire prevention before the public by all existing Government agencies in the interior of Alaska is imperative; until this is brought about all efforts to secure public support for the prevention of forest fires are futile.

7. The interior forests should not be withdrawn from entry for National Forest purposes, nor included within a National Forest, nor should their existing status be changed in any way, other than that it would appear logical that their protection from fire should be delegated to the Government service, whose special function is the protection and administration of Federal forest lands.



# FOREST FIRE PROTECTION IN GEORGIA

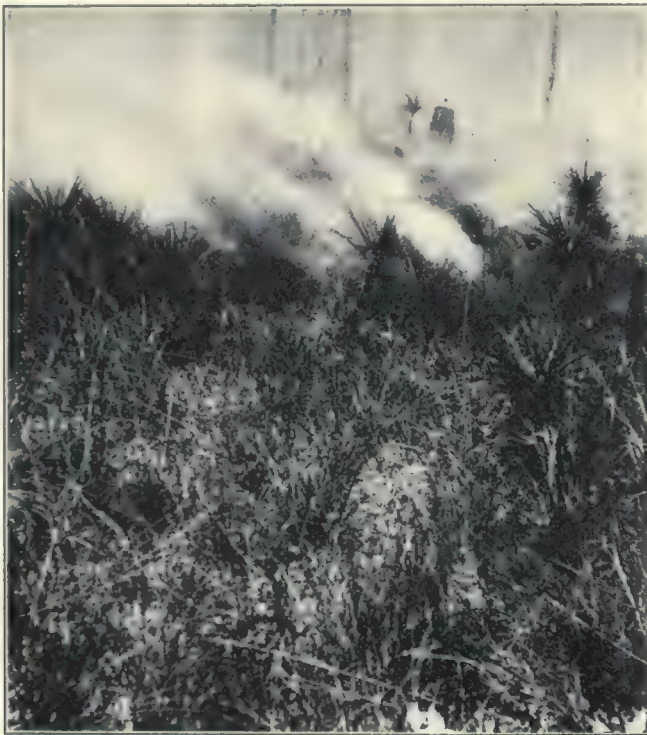
By J. G. Peters, United States Forest Service

[An address by J. G. Peters, Chief of the Branch of Forest Management, United States Forest Service, before the Georgia Forestry Convention, at Macon, Georgia, June 9, 1922.]

ONE of the urgent matters demanding the attention of all Georgians at this time is to what extent the lack of forest protection affects the economic life of the Commonwealth. Your forests are among your great natural resources. They have supplied a variety of products not only for use in the upbuilding of Georgia, but they have as well been the means of bringing wealth into the State from the outside. Yet Georgia is fast reaching the point where it will have to go outside for some of its wood materials, because the State has not yet taken steps to make sure that all of its needs of this nature should be sup-

plied within and a tidy balance left for distribution elsewhere. The farmers are our greatest users of wood. As you go through this Southern country, how many dilapidated farm buildings do you see, buildings unpainted, rotting, falling to pieces. How are you going to house and equip the hundred-thousand settlers you are urging to come to Georgia, if you cannot house and equip the farmers already here? I have heard the industrial agents of some of your railroads tell of the difficulties of diverting the stream of immigration from the West and North to the South. And this is in spite of your wonderful attractions. Would not cheaper lumber be a tempting bait?

The number of farms in this State, according to the 1920 census, is about 311,000. It has been estimated that the lumber requirements of the average efficiently run farm for upkeep and improvements is 2,000 board feet yearly. This would mean, therefore, 622,000,000 board feet yearly for this State, which exceeds your present yearly consumption of lumber for all purposes and is more than 80 per cent of your present yearly lumber production. Bear in mind that these 622 millions would represent your requirements for the upkeep and improvements of farms alone, and that this estimate is based on



FIRE ON LONG-LEAF PINE LAND

Note how the undergrowth, which is full of pine seedlings, is furnishing the best fuel for the flames.

plied within and a tidy balance left for distribution elsewhere. We are a wood-using people. We have become accustomed to using wood wherever it will serve our purpose, to using it lavishly, and to using the better grades, and we simply cannot get along without it. Therefore, when Georgia ceases to be self-sustaining in lumber and other forest products, as will certainly be the case unless timber depletion in the State is checked, you will have to go outside, and you will go outside, to other forest regions, very probably to the Pacific Coast, for that is where the last big supply of timber remains. And you will accordingly pay the freight. Under present lax methods of caring for our forest lands, the day of cheap lumber and cheap forest products has gone. The price is increasing as the supply dwindles.

What about the dependence of your farms upon the



ONCE SWEEPED BY FIRE

While many of the long-leaf pine on the fire swept area survive their growth will be seriously checked.

the average farm for the entire country. But will Georgia be content merely with the average farm? I think not. The South is on the eve of a great agricultural awakening. Surely you are not going to let Georgia sleep by the wayside for want of a fundamental necessity in the economic life of the farm.

What about the moving of your peach crop? The fruit grower must have wooden containers. It was estimated



that last year five million of these containers were used in this state. With young orchards coming constantly into bearing, your needs in this respect are bound to increase. Where is the lumber coming from to make these containers? From Georgia? or from somewhere else? It is for you to choose.

And what about your ever-increasing crops of vegetables? Why, this State is a veritable bursting land of plenty. But what's the use of raising all these good things if you are going to be curtailed in shipping them to the markets?

Do you know that the per capita lumber consumption of Georgia is among the lowest of the States? This is indicated by preliminary computations lately prepared in the Forest Service. It is far below that of the big agricultural States of the West and is even below that of the small, manufacturing States of New England. It is nearly in a class with the per capita consumption of those European countries where wood is a luxury. Surely this cannot continue in Georgia where the possibilities for growth and de-



PROTECTED FROM FIRE

Showing how quickly the long-leaf pine progresses when the young growth is protected from fire.

velopment are unlimited. Some day you will use several times the quantity of lumber you are now using. Are you going to anticipate this and provide for a supply at home, or will you follow the example of the Lake States and permit timber depletion to continue unchecked and then after your supply has dwindled, be forced to bring lumber from the Pacific Coast or perhaps from Siberia?

Georgia's lumber production declined from one and one-third billion feet in 1909 to less than 900 million feet in 1919, or 33 per cent. A very significant thing about this decrease in production is that it took place in the face of an increase in population which one might expect ordinarily to be accompanied by an increase in demand. A further decline from the 1919 figure occurred in 1920 amounting to 15 per cent. Your naval-stores industry has been waning in the past 20 years to the extent of approximately 75 per cent, and from the leading State in this great industry, which is confined exclusively to the South, Georgia is dropping to a place of insignificance.



AFTER A FIRE ON LONG-LEAF PINE LAND

Note the burnt stumps of young pines, showing how the fire not only kills the well grown trees, but destroys new growth so that the land unless artificially reseeded is no longer productive.



All this in face of the fact that the forest industries of Georgia rank third in importance among the manufacturing industries of the State. They represent an invested capital of some \$41,000,000; they employ 31,000 people; and they turn out \$66,000,000 worth of products annually. Are you going to let your forest industries decline still further for want of a supply of raw material? Are you going to forego the tax revenue which they bring into your State and local treasuries?

The only satisfactory answer to these questions is to grow more wood. Of all the regions in this country there is none that can compare with the South in the climatic and soil conditions for producing readily and quickly timber supplies of great value. This is not realized in this State by many. You do not appreciate the possibilities and value of the young, fast-growing trees with which this region is favored. If you did, you would not permit fires to run through the State from one end to the other and burn up millions of these little trees every year.

In this State in the six years from 1916 to 1921, inclusive, there were reported to the Forest Service 23,000 forest fires, nearly double the number reported in any other State. Ninety-two per cent of these fires resulted from carelessness or from design; 8 per cent from lightning, the only agency that cannot be controlled. Twenty-six per cent were of incendiary origin, 21 per cent from causes unknown, 16 per cent from brush burning, and the remainder were caused chiefly by campers, lumbering and railroads.

These fires burned over about 6,000,000 acres, or almost a third of the State's forest land area, and caused a money loss to timber and improvements alone of \$5,-

500,000. These figures are conservative; they are incomplete, because of the difficulty of securing statistics of this character where no protective organization exists in the State which could collect them. If to these direct losses are added the losses which cannot very well be measured in dollars and cents, such for example as the destruction of small trees, the killing of game, the drying up of fishing streams, the burning up of soil fertility,

the removing of the ground cover from mountain lands, which makes it possible for erosion to follow and silt to be deposited in your river channels, and the rendering and keeping idle an area estimated to be 5,000,000 acres of forest land in this State, you can readily see that the total damage reaches a staggering figure. Rome is burning, ladies and gentlemen, as you of this State sit by and fiddle.

Obviously the thing to do, the thing which a number of other States have done, is to put a stop to the practice of promiscuous and broadcast burning of the woods. Some people say that it cannot be done, that it is a part of the very life of the people, is in fact regarded by many as an inalienable right, and that it is inevitable. But it can be done, because it is already being done. I would hate to think that the situation in Georgia is any worse than it used to be in East Texas and in Louisiana. Yet a big gain is being made in

the progress of stopping forest fires in those States. Let Georgia take its cue not only from these two States, but as well from North Carolina, Tennessee, Virginia, West Virginia, Maryland and others, from the no less than 27 States all told which have seen the practical value of stamping out the forest fire menace. All of these have recognized their responsibility to aid in providing tim-



SECOND GROWTH LONG-LEAF PINE

This was reproduced naturally and protected from fire. Age: 40 years. Height: 70-80 ft. Diameter (breast high): 10-14 inches. Yield per acre: About 15,000 board feet of lumber, or about 50 cords of pulpwood, in addition to from 100 to 200 turpentine cups. This illustrates what young growth will do if protected. Its value is steadily increasing.



ber supplies for their citizens for all time. The Federal Government also has recognized its responsibility in the matter. Eleven years ago Congress passed a law authorizing the Forest Service to cooperate with any State which had established a forest fire protection system and would expend for the purpose at least as much as the Federal Government would expend. The best indication of the effectiveness of this cooperation has been its growth. The first year less than a dozen States could qualify under the law; today the number has increased to 27. The State appropriations made yearly for forest fire protection have increased in the meantime from \$250,000 to \$1,750,000. The Federal government spent the first year less than \$40,000; today it is spending \$400,000 and asking for \$1,000,000. This Federal fund is allotted to the States on the basis of the greatest good to the greatest number. States which have the most difficulty in helping themselves are given relatively the most assistance; they are stimulated to further effort. This is generally the case with beginners, and in many instances their appropriations have been duplicated with Federal funds. The combined State and Federal fund is used for the maintenance of a protective system operating under State laws and on private and State lands on the forested watersheds of navigable streams.

Many of these systems are developed to a high degree of effectiveness which results in the accurate location of fires and their prompt control. The backbone of the system is the local warden or patrolman who travels the wooded districts preaching and warning against promiscuous burning. Their activities are coordinated and directed by a chief warden who is usually the State Forester. As you can readily see, the organization of such work is along simple lines; it is not complicated. Still, it requires initiative, and therefore much depends for effectiveness upon the individual members. The big job of a protective system is to educate the public, to create a sentiment against forest fires. This would be particularly the case in Georgia as it has been, and still is to a considerable degree, in other southern States. To teach the people that promiscuous burning of the woods is a menace to the welfare of this State is the big problem.

Forest fire protection is a business proposition. It requires the expenditure of money to be undertaken successfully. It requires the participation of the public as represented by the State and Federal governments, because it is a public problem. Will not Georgia make it possible at this time for the Federal Government to join hands with her in helping to solve the forest fire problem in this State?

**A** forester should stand the life in the woods like a tree, and should stand the knocks in the mill like a log, lest he go to waste like the culls.—*LaSal Salvo*.

## SUMMER IN CALIFORNIA

By Fannie K. Lyle

When the summer days are lengthening  
And the hills are turning brown,  
When the harvest wealth is strengthening  
And the air seems golden down,

Come where our sunkissed mother  
To the blue lifts up her hills;  
O, the beauty of no other  
Land so satisfies and thrills.

O, the freshness of the morning!  
The radiant, happy noon!  
The flowers the fields adorning!  
The wild bee's dreamy tune!

The blood-red boled madrona  
Flaunts gaily by the streams,  
And upon the rounded hilltops  
The live-oak glints and gleams.

Hark! A medley of bird voices,  
Then all is hushed and mute;  
Now a meadow lark rejoices,  
Its throat a mellow flute.

And when evening's shadowy fingers  
Scatter dusk the vales adown,  
The golden sunlight lingers  
Upon the hilltops brown.

O, hear the quail's quick calling,  
"Come home, come home to rest,"  
When the shades of night are falling  
Over her hillside nest.

Lo! Through a canyon narrow,  
Bright glows the twilight star,  
And the notes of a song sparrow  
Sound softly from afar.

### A HOUSE CUT TO SAVE A TREE

**I**N order to save the trees surrounding the Scanlan home on Main Street, between Calhoun and Pierce Avenues, it was necessary to divide a house being moved from the old B. F. Bonner home at Main and Calhoun, says the *Houston Post*.

The case went into court before Judge Charles E. Ashe, when the Scanlan estate sought an injunction to prevent damage to the trees because of moving the house. The only means of accomplishing this was to divide the building.



## DR. HENRY S. DRINKER HONORED

**D**R. HENRY S. DRINKER has been appointed a member of the Forest Commission of Pennsylvania, succeeding the late Dr. J. T. Rothrock. Dr. Drinker who was sworn in on June 26 was urged by Governor Sproul to accept the appointment and did so in the same spirit of helpfulness which has marked his many years' interest in the cause of forestry to which he has given so much of his time and ability.

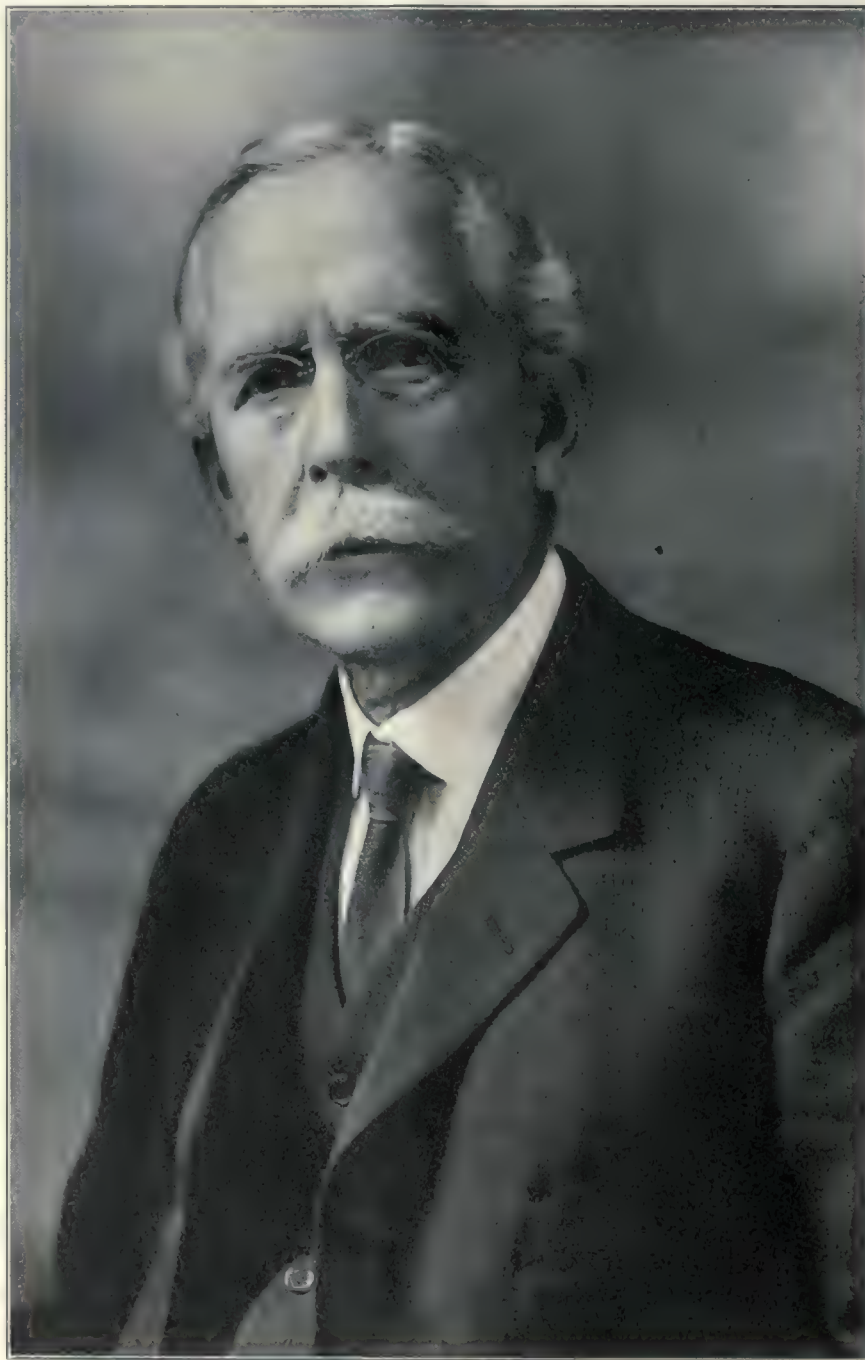
Dr. Drinker is a former president and for some years has been a director of the American Forestry Association. He is president of the Pennsylvania State Forestry Association, and a member of the Forestry Committee of the Chamber of Commerce of the United States.

Besides filling the duties of these several offices Dr. Drinker has been a hard worker on forestry committees, has made an exhaustive study of forest taxation, and has been notably active in furthering forestry in every way he could. As a member of the Forest Commission of Pennsylvania he will be adding to his many duties but he does so in the spirit which is so characteristic

of forestry requirements, to advance forest conservation, to provide for the perpetuation of remaining forests and to promote forestry for the benefit of the people.

In his official capacity he will be able to do much to aid in carrying on the already well advanced and excellent

program of forestry in Pennsylvania. His approval of appropriations will have great weight with the state legislature and his endorsement of forestry legislation for the state will warrant the support of both the upper and lower house. The fact, too, that his appointment was heartily approved by Gifford Pinchot, whom it is generally conceded will be elected Governor of the state this fall, means that he will be in a position to accomplish a very great deal for forestry. The appointment of Dr. Drinker was greeted with particular commendation by the newspapers of the state and by the friends of forestry, and it is certain that he will have the earnest and energetic support of the press in advancing any forestry development which he believes will be to the benefit of the great Commonwealth of which he now is an official. The mem-



DR. HENRY STURGIS DRINKER

Appointed by Governor Sproul, of Pennsylvania, a member of the Forest Commission of that state to succeed the late Dr. J. T. Rothrock.

him, the spirit of willingness to do whatever he can to forestry legislation, to broaden the public appreciation of forestry needs and a knowledge of our for-

esters of the American Forestry Association wish him every success possible in this, his new undertaking for forestry and for his State.



# THE EYES OF THE FOREST

By Wallace Hutchinson

EVER since the time when the descendants of Noah undertook to build a tower reaching unto heaven on the plains of Shinar, the people of this world have instinctively sought high elevations from which to look out over the earth. Thus in the olden days kings viewed great battles from the crests of hills, and watchmen were set in high towers to guard cities from the menace of flood or fire. Even in our own time the lure of height, as exemplified by the Eiffel tower, Woolworth building, Washington monument, and numberless high mountain peaks, annually attracts thousands of visitors.

It is but natural, therefore, that the United States Forest Service, charged with the administration and protection of more than 156 million acres of National Forests, located for the most part in the rough and inaccessible mountain regions of the West, should early develop a system of forest fire detection based upon lookouts placed on high elevations. More than 500 such eyes of the forest now dot these great Federal reservations—in the White Mountains of New Hampshire; the Appalachians and Ozarks of the South; the Lake States; the Rocky Mountains and the Cascade, Sierra Nevada and Coast Ranges of the Pacific.

The evolution of the fire lookout forms an interesting chapter in the history of the development of our National Forests. When a number of these public areas, containing vast timber, water, and forage resources, were first set aside two decades or more ago for the perpetual use of the American people, little thought was given to their protection. This was due largely to the lack of adequate funds and trained personnel to combat fires. But in 1905, following the transfer of the National Forests by President Roosevelt from the Depart-

ment of the Interior to the Department of Agriculture, and the creation of the Forest Service, a new era was inaugurated. Since that time, fire control has been given precedence over all other work by Uncle Sam's foresters, and an efficient system of detection and suppression developed which has materially reduced the annual fire loss in all Government forests. In 1920, for example, out of a total of 6,078 fires on the National Forests, 80 per cent were discovered and extinguished before they had covered 10 acres each. Fire lookout stations played a large part in these results.

In its early efforts to check the ravages of fire, the Forest Service established an extensive system of

ground - patrol of the forests. Definite routes of travel were laid out and men called "smoke - chasers" employed to patrol these beats. In the course of their duties, these men found that by visiting prominent elevations it was possible to view large areas of forest, which would otherwise be unprotected, and detect smokes which could not, ordinarily, be "spotted" from the trails running



A PRIMITIVE LOOKOUT

This is the most primitive style of fire lookout—a rocky point on the Olympic National Forest in Washington, from which large areas of forest are visible.

through the dense timber. This led in time to the building of rough ladders to the tops of high trees, the construction of rude log towers, and the selection of isolated peaks as observation posts. Thus the idea of lookouts for fire detection gradually developed.

It is not such a far cry from the days when smoke-chasers climbed to the top of some hill to sweep the mountains with their glasses, to the highly developed lookout stations of the present day. A period of less than 10 years covers the marked progress that has been made in this method of fire detection. During this time it was found that the highest mountains did not always make the best lookouts; that observatories must be pro-





NEAR THE TOP O' THE WORLD

This is the next step in the evolution of a lookout; a temporary station equipped with wooden table, map, and crude instrument (alidade) for sighting "smokes," but unprotected from the elements.

tected from lightning; that an efficient system of communication with the outside world was of first importance; that instruments of precision and good maps were necessary for the accurate locating of fires, and that care should be taken in selecting officers well qualified to fill the exacting position of observer.

The most elementary form of fire lookout was an observation point on the summit of a hill, or in the top of a high tree reached by ladders. Next in order came a rocky peak or a roughly constructed log tower, equipped with a table on which could be placed a map of the forest and a crude alidade used for locating smokes. These were all classed as temporary stations, unprotected from the elements, and visited only occasionally by patrolmen or rangers. It was soon discovered, however, that such lookouts did not afford the forest any great degree of protection, since between the hours of observation it was possible for a fire to start and gain considerable headway before

being discovered. This led to the establishment of semi-permanent lookouts, where the observer usually lived at the foot of the mountain and spent a part of each day on the summit watching for fires. Under such conditions, when a fire was discovered, it was necessary for him to ride or walk to the nearest telephone, perhaps miles away, to report, thus consuming hours of valuable time.

The cold and storms common to high elevations even in mid-summer caused great discomfort to these observers, with the result that steps had to be taken to provide them with shelter. Stone or log houses were, therefore, built on the tops of peaks, awnings were put up over rocky points to protect the men from the sun, and where wooden towers were used a rough shelter was built on top, with board shutters for windows. Much needed telephone connections with the nearest ranger station were also in-



THE LOOKOUT BECOMES ESTABLISHED

Severe weather conditions at high altitudes later made it necessary to build rough log shelters for the observers and to erect awnings to protect them from the heat of the sun. From such crude equipment the efficient lookout station of today has evolved.



stalled, so that prompt reports on the discovery of fires could be made.

In those days it was the common practice for the lookout man to live in his observatory, either going outdoors or up on the roof to make observations. It was not long, however, before it was found that high peaks and lofty towers and trees were very prone to attract lightning during storms. A number of lookout stations were struck by heavy bolts, the interior of the buildings

wrecked, and the observers rendered unconscious. Though no serious accidents resulted, forest officers were quick to recognize the fact that lookouts must be protected from lightning, and that it was much safer to have the observer live elsewhere than on top of a peak.

Errors resulting from rough maps and crude instruments used in locating fires, the necessity of going outside the lookout house to make observations, the difficulty of securing men properly qualified for the job of observer and many other factors detrimental to the success of this method of

fire detection, finally led the Forest Service to make a careful investigation of all phases of the lookout problem. The results of these investigations, which covered a period of several years, finally caused the adoption of uniform standards for lookout stations in various parts of the country, and form the basis on which all new National Forest lookouts are now established.

The standard forest fire lookout of the West, to-

day, is a square one-room structure with hip-roof, varying in size from 10x10 to 14x14 feet, set on a stone or concrete foundation or bolted to the rocks, and held in position by stout guys-wires. The four sides of the house, including the door, are made up of large glass windows set with the lower sash three feet above the floor, which allows an unobstructed view in all directions. Lightning protection is afforded by an "electric screen" overhead, or by heavy wires running from the

peak of the roof down all four corners into the ground. A telephone line connects the lookout with the supervisor's headquarters and the various ranger stations of the forest and also with the nearest commercial exchange. Heavy wooden shutters protect the glass windows during storms; and the building is attractively painted inside and out.

The furnishings of such an observatory, or "crow's - nest" as it is usually called, consist of a heavy wooden table oriented by transit survey and securely bolted to the floor, on which rests the fire finder; a high revolving office

chair which permits the observer to view the entire circle of the horizon without getting up; a desk telephone with a head-piece receiver; low cupboards under the windows for maps and forms; a bench for visitors, and a wood or oil stove with which to heat the room during cold weather. A drawer in the table holds paper, ink, pen, and pencils and the official diary, while a pair of high-powered field glasses are kept on top of the table ready



HERE AN ENORMOUS TREE IS UTILIZED AS A LOOKOUT STATION

This is another of the early types of lookout, on the Shasta National Forest in California. The observatory is in the top of a giant tree. For comparative purposes note the man standing by the flag.



for instant use. The most important piece of equipment is the Osborne fire finder, the invention of a Forest Ser-



NOW A PERMANENT STATION

First just a temporary lookout, this was converted into a permanent station by the construction of a stone house which serves as living quarters for the observer. You can see him up in the "crow's nest" looking for "smokes" on the Bridger National Forest, Wyoming.

vice officer by that name, with which the location of smokes is determined. It is in such an observatory that the



THE "LADY LOOKOUT"

The inside of an up-to-date fire lookout observatory on a National Forest, equipped with the latest scientific instrument for the locating of "smokes"—the Osborne Fire Finder, and "manned" by one of Uncle Sam's lady lookouts. The Devil's Head Lookout on the Pike National Forest.



A FIRE LOOKOUT IN AN UNUSUAL LOCATION

the most unique forest fire lookout tower in the country, for it is located in the treeless sand hills region of the Nebraska National Forest, where the Government has reforested 5,000 acres of rolling grass lands. Note the fire line—the white streak—the plantation of pine trees on the right.



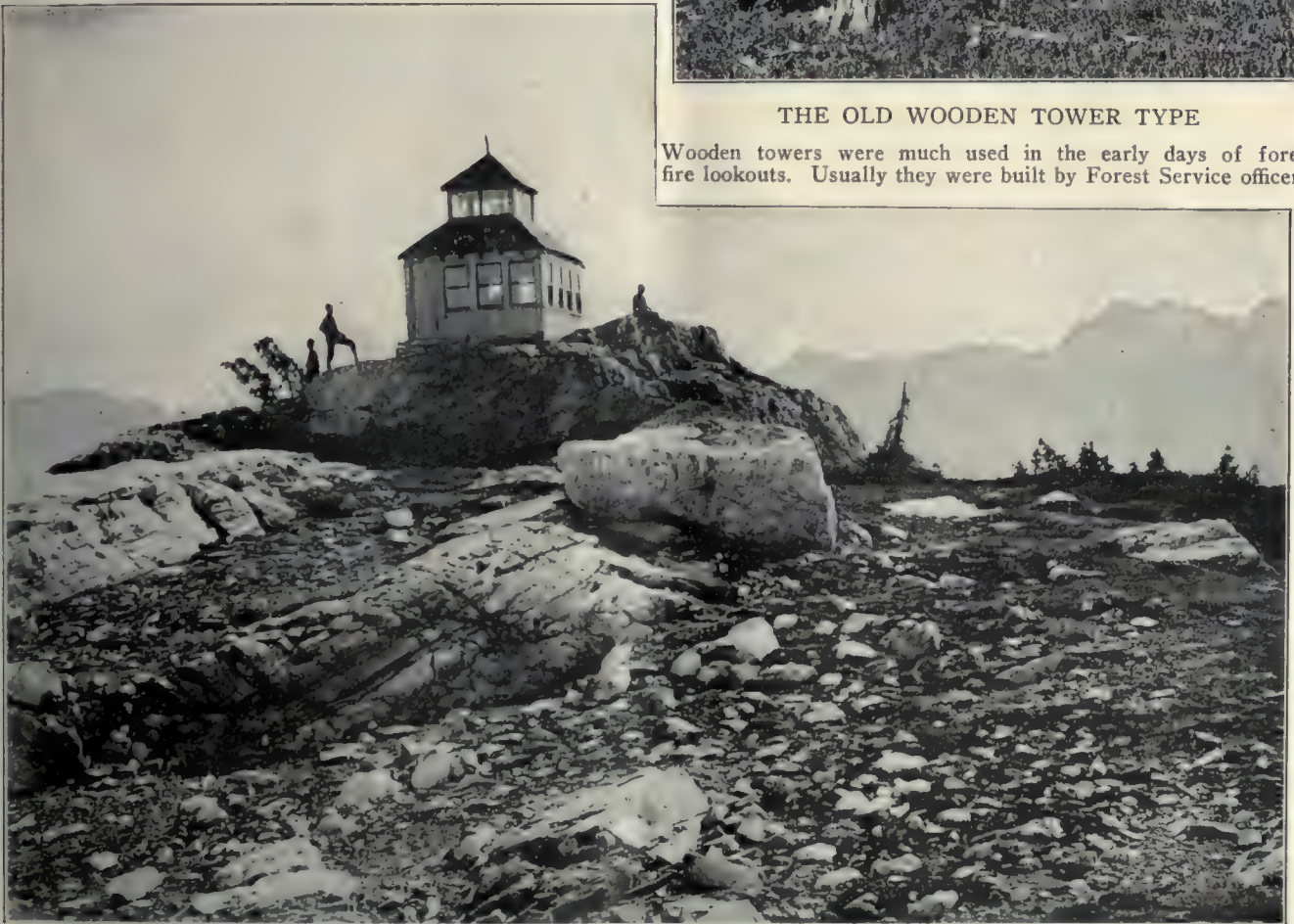
lookout spends all his daylight hours, but he lives in a log cabin located in a sheltered spot a short distance below the summit of the peak.

In the National Forests of the Eastern and Lake States, where the country is flat or rolling in character and there are few mountains, a different type of lookout is used for fire detection. In these regions the problem is to get a sufficient distance above the tops of the trees to be able to see out over the country. Wooden towers built of logs and bolted together were first used for this purpose, but have been supplanted in recent years by specially constructed steel towers. This new type of lookout may vary in height from 30 to 80 feet or more, depending on the flatness of the surrounding country, and be equipped with a glassed-in observatory connected with the ground by stairs, or may have only a small 6x6 screened-in observation platform on top, to reach which the lookout must climb an almost perpendicular iron ladder. Although securely guyed by wires, lookout work on top of one of these "steel spiders" is anything but pleasant, because of the constant swaying of the tower in the wind. The most unique fire lookout tower in the



THE OLD WOODEN TOWER TYPE

Wooden towers were much used in the early days of forest fire lookouts. Usually they were built by Forest Service officers.



A STATION OF THE EARLIER TYPE

This is one of the early Forest Service standard fire lookouts. Here the living quarters and observatory are combined in one building—the observatory being reached by a ladder from inside. Glass windows were also coming into use just about then. This is Sourdough Lookout on the Washington National Forest in Washington.





#### THE RED TERROR OF THE FOREST — FIRE

The "reason why" for all lookouts. And it is to a comparatively small band of men that we look for protection from its ravages. Only because of the wonderful efficiency of these men of the Forest Service, who see to it that the regulations are rigidly enforced, and who are untiringly "on the job," are we often spared the terrific price of carelessness.

country is that of the Nebraska National Forest, in the vast sand-hills region of that State. Here an observatory has been built on a high hill from which a constant watch is kept over a vast area of rolling grass lands. There are no natural forests in this region to be devastated by fire, for trees grow only along the river banks in the sand hills. But the Government has here undertaken the largest tree-planting project in the United States, and it is to protect some 5,000 acres of pine forest, set out by hand and ranging from 3 to 18 years of age, that this fire lookout is maintained.

With the evolution of the lookout station there has also come a change in the character of its personnel. Rarely now is the old "mossback" type of observer, who knew well the country he was guarding, but was too ignorant to keep anything but a rough diary, found on National Forest lookouts. His place has been taken by a bet-

ter educated class of officer, versed in topography and surveying, who can handle complicated instruments and set down concise observations on meteorological conditions, areas of visibility, and other important data that all lookouts are now required to keep. Young women have also entered this field of outdoor work, and are now to be found handling lookout jobs in an efficient manner in the National Forests of Colorado, Minnesota, Oregon and California.

Within the past few years the airplane has vied with the lookout as an effective means of detecting incipient forest fires. 1921 marked the third season during which an elaborate aerial patrol was maintained by the Forest Service in cooperation with the U. S. Air Service throughout the forest regions of the Pacific Coast States. The airplane, although an important ad-

junct to the detection and fire fighting systems now in use, will probably never replace the lookout station. One of the reasons for this is that any given part of a forest located along an aerial patrol route is only under obser-



#### THE CLOUD PATROL

A careful watch is kept during the fire season by regular air patrol. This one goes out from Mt. Elwell, on the Plumas National Forest in California.





THE AIRPLANE FOREST PATROL

This patrol is maintained by the Forest Service in cooperation with the Air Service of the United States Army in the Pacific Coast States. The airplane is an important adjunct to the ground system of fire lookouts maintained on the National Forests.



THE HIGH TYPE OF STANDARD FIRE LOOKOUT

This is the sort of tower used in the level forested regions of the Eastern and Lake States. An 80-foot tower with screened-in observation platform on top, reached by an iron ladder. Pennsylvania has 68 towers of this type and 80% of her fires detected last year were located by the use of these towers.



THE LATEST MODEL STANDARD FIRE LOOKOUT

This is the one now in use in the West—a glassed-in crow's nest, guyed to the rocks with wires, connected with the outside world by telephone, and equipped with the latest scientific instruments for weather observations and smoke detection. Harney Peak Lookout—in the wonderful Black Hills of South Dakota.





A TYPE OF STANDARD FIRE LOOKOUT

This is another one of the Forest Service fire lookouts, and a type which is rapidly coming into favor and use. It is a steel tower, 40 feet high, with glassed-in observatory reached by iron stairs, located in Arizona.

vation from an airplane for a few minutes each day, on account of the short duration of flights, the speed of the ships, and the great distances covered. The lookout observer, on the other hand, maintains a constant watch from daylight to dark, and though his field of vision is limited by distance and weather conditions the territory over which he stands guard is under observation for the maximum period each day, and he is thus able to discover many fires which the airplanes miss.

The forest fire lookout is here to stay. It has been thoroughly tried out and proven a success. The very fact that one eastern State, Pennsylvania, with its new and elaborate system of fire control, erected 68 lookout towers during the past year itself speaks for the permanence and effectiveness of these eyes of the forest.

### The Tragedy Of Carelessness By Orville Leonard

THE air is breathless in the woods. The dried leaves—brown and red and yellow—rustle under foot.

The nobly rounded breasts of distant hills, the brush-clad nearer slopes, the shadowy forest depths between the big tree boles, are veiled in warm blue mist. . . .

Suddenly another mist comes stealing through the trees. It is not soft blue mist, but sinister gray smoke. Then billowing black clouds, hot and choking and shot with flame, follow swiftly after that stealthily spreading

veil of gray. The little flames creep steadily through the carpet of dead leaves, the brush-clad hills are a giant's bonfire, the boles of the noble forest trees are torches of living flame.

The partridge scuttles beneath the brush; the rabbit darts to cover ahead of the roaring menace. With the thick smoke billowing ahead and covering the woods, a steady wall of flame roars on, licking up in its rapid run, every twig and bush and tree—every living blade of green.

Then the partridge and the rabbit are outrun and swallowed in the fire—nay, more, their very species are nearer extinction, for all the young of every living thing have been seared to a crisp by that fierce fiery breath.

And when the fire demon has swept his course, he leaves a blackened swath of stark, dead desolation that cannot grow into the fair green forest that it was within the life span of this generation. For years to come, the twisted arms of fire killed forest trees will writhe in dead, black protest to the sky.

For tragedy may be the result of thoughtlessness, even through such a tiny instrument as a carelessly flung match, or a campfire abandoned while still burning.

## Our Fire Problem--1922

A Campaign is At Hand

The Enemy is Fire

His Opponent is You.

The Dispute is over Forest Resources.

The Final Outcome is Unquestioned. But

What Shall the Losses be

In Timber, Range, Scenic Beauty, Buildings, Human Life?

The Answer Is

The Losses will be Small If

You and Other Veterans of Former Battles

And Go-Get-'Em Recruits

Are Aggressively and Everlastingly on the Job.

With Head and Hand and Weapons,

Planning, Preparing and Anticipating

Where and When the Enemy will Strike

And How You Can be Right There

To Gas Him in the Zero Hour

Before He has Time to Dig in

And Throw Up a Smoke Screen.

Slackers, Slumberers, Blunderers and Shade Hounds

Will March Over

To the Forever Inactive List

Which has no Pay Roll Attached.

High Voltage, High Pressure

High Power and High Speed

Broadcasted by Contact and by Radio

During the Campaign of 1922

Will Keep the Enemy

Where He Belongs

In the Final Review

The Forest Service will Stand Supreme

For Duty Well Done.

(District Forester, D-6, Circular Letter.)



# FOREST RECREATION DEPARTMENT

Arthur H. Carhart, Editor

## The Fool and the Demon

**W**HY do they do it?" almost wailed Corey. I admitted I did not know.

Corey is not the name of one of the best landscape architects in the west, but it will suffice to designate the man who left his work last year and paid the San Isabel Forest the compliment of directing some of the recreational work there. He is one of my best friends, an artist of the highest ability and a newly developed lover of the great landscapes of the Rockies.

Night as black as that darkness found in an unlighted cavern had settled down on the camp as we talked. In the next tent some of our crew who were building the Cascade Trail played cards. In the far distance the lights of Pueblo twinkled, and from up the canon came the treble roar of the small falls of Squirrel Creek. Talk had swung idly from one subject to another. A mutual friend's views on parallelism in musical and landscape compositions, the economic situation, law in city plan, and color blending were a few subjects that set our tongues going.

Then fire and forest landscape became the theme of the discourse. It developed that the landscape architect in charge of great natural landscapes is if anything more an enemy of the fire demon

than anyone in the whole fabric of Forest organization. For, he it is who fits land surfaces for human use and by thus bringing the human family to the forests, produces greater beauty return to the Nation, a greater appreciation of nature and greater health in mind, body and spirit. And the greatest destroyer of natural beauty values in the Forest is fire. In order to preserve this beauty to give to the people the landscape man must join hands with all against this common enemy.

The majority, the greater majority, of campers are good forest residents. They know the rules of the game and they play them. They leave a clean camp. They are clean in their whole makeup, physical and mental. And they are careful with fire. This attitude comes from being in close contact with the outdoors for several seasons and in that way becoming so respectful of natural beauty and loving it so intensely they treat it properly.

The great family of trans-state tourists who bring their camping outfit with them are almost wholly educated to be careful with fire. They know what it is to leave the Fire Demon loose in the timber of the hills. They have either seen the flames licking up the timber and with it the beauty of the hill-



THE FIRE DEMON'S BANNER

It was in such a country as this that the Woodrock Fire raged. Much of the gruelling heart-breaking work of stopping these fires will be eliminated when more people are careful with fire.

know what it is to leave the Fire Demon loose in the timber of the hills. They have either seen the flames licking up the timber and with it the beauty of the hill-

Fire in forest lands does much damage that is directly computed in board feet of lumber and then reduced at once to a cash basis founded on current lumber prices. Or it can be shown that so much watershed protection is destroyed by fire each year.

But there is a great value which cannot so readily be put in figures which is just as surely destroyed by a forest fire. And that value is the beauty which is present in any tree-clothed section of the country.

The recreationist is justly blamed for many fires being unleashed in forests. Perhaps too much blame is heaped on his head. It is none the less true that in the aggregate he does no insignificant amount of damage to the very qualities which call him into the forests each year.

It is possible to almost wholly eliminate all man-caused fires if sufficient care is exercised. To bring home the seriousness of the offence of leaving a fire unquenched or a cigar butt still alive these stories are offered. They represent three views and are based on facts. Mr. Ancona has presented the outlook of the field administrative man. Mr. McLaren outlines a vivid story of one fire he helped kill while on the job of fire suppression in one of the western districts of the Forest Service. The third represents a landscape architect's thoughts relative to the destroying of beauty by fire. If they make you use care with fire they have done their duty.—Arthur H. Carhart, Editor, Recreation Department.



side, they have from afar witnessed the smoke columns towering over an orgy of the Demon, or they have traveled sufficiently to see in old fire scars that, once turned loose, fire will ruin, not alone economic values, but scenic values as well.

It is another fellow that does the damage. And so I told Corey that night we talked. It is the man insensible to beauty who lives with it all the time and never reacts to its stimulus that cannot see more in a green timbered hillside than in a row of charred stubs. He is of two types. The first of which is the man who has no sense of the beautiful whatever and the second is the man who has so often beheld beauty that he is surfeited with it all. Either are to be pitied, but pity will not excuse their many crimes against beauty through not being careful with fire.

Then there is another recreation man who is much more innocently dangerous than the man who does not care for beauty. He is the fellow who loves all outdoors—for he is out in it for the first time. But he does not yet know how to handle himself in the hills and has not yet come to know the work of the Demon. He is "the man who doesn't know it is loaded." He is always warned before he gets on the camp areas but he goes serenely along with the idea somewhere in his mind that while it happened to others it will never happen to him, for he is a "regular whizz" as an outdoor man. He will sooner or later learn not to fool with fire but it may cost much in labor, materials, supplies and last, but not least, beauty. He is a menace equal to the man who never will care.

Can you conceive of the fierceness of the loathing which the painter of a beautiful canvas might entertain against a thoughtless amateur dabbler who considered himself a judge of art and who in pointing out some point of technique smeared the fresh paint which after many days of work had just taken final form under the master hand? If you can you may have some idea of the real personal feeling the landscape man might entertain against the thoughtless lout who ruins a whole natural beauty composition with a cigarette stub not extinguished before he throws it away. The whole loss from all standpoints affects the artist make-up of the landscape architect, but he reacts more than anyone else to the loss in beauty.

The entire loss in beauty may be sensed by many, the different factors may be reckoned by a few, but the

landscape man sees the whole loss from the human use side of the problem. The landscape is no longer habitable and it no longer can serve human beings and for that reason he most swiftly condemns the man who comes to the forest and through the grossest carelessness turns loose the fire fiend.

Beauty is one thing of great value which cannot be dissipated through proper use. The pleasurable reactions experienced from an outlook when viewed by one person detracts from that scenic panorama not a whit more than when the same is looked upon by thousands. The laughing gurgle of the stream may be heard by five or fifty and still have the same cheery or mysterious quality about it. In fact the one big commodity which can be used time after time without taking anything off of or out of the ground is scenery. Scenic qualities have

been said to be the only things which one could sell time after time and still keep.

But misuse will soon dissipate scenic beauty and its values. Poorly constructed developments, ill-advised planning, grotesque and deformed structures all soon dispel beauty in a scene and supplant it with unsightliness. But greatest of all destroyers is fire. For while one person can make one little park a thing which is no more beautiful by putting up a cast iron or other inappropriate structure, it spoils only that one small section. In contrast, one foolish, thoughtless, careless individual by not putting out the little glow left in a match when he throws it away turns loose a mighty evil

power which at almost one breath sweeps everything of beauty out of existence in hundreds, often thousands, of acres of ground.

And so we talked of this that night. Of the coming of the people to the forests, of the many, many good campers and woodsmen, of the great values which the whole population receives from coming into forest lands, but most of all we talked of the risk some take in utterly ruining through carelessness the very thing which attracts them to the spot. The fallacy of the thing is appalling. It is like killing this beauty because it is so dearly loved. Almost in wondering amazement that people would do such a thing as risk that beauty, the question came, "Why do they do it?" And as I answered my very dear friend that night, I must say I cannot for the life of me see why the recreation seeker will ever take the slightest chance of placing his own playground in jeopardy of the holocaust.



FOREST SERVICE CAMP FIREPLACE

A few dollars invested in one of these simple structures may save thousands of dollars worth of lumber and great beauty values. They are always located so no fire can get away from them if at all properly handled and thus help protect the Forests.



# Answering the Call

By John McLaren

THE day had been a hard one at the District Office. Fire season was on. Every ring of the phone bell threatened to send some man into the field to take charge of a big fire. But no call had come to me and my family and I were happy in the thought.

"Well, John," said the wife, "glad you are home for supper tonight. I've been afraid all day you would telephone that you must start for a fire somewhere. I wish it would rain so that the fire danger would be reduced. I've packed your field clothes so that everything would be in readiness if you did have to leave in a hurry."

The evening meal finished, we were having a delightful romp with the kiddies, when "Ting-a-ling. Ting-a-ling" came the summons.

"Hello," came the call over the wire. "This is Western Union. Telegram for the District Forester signed by the Supervisor of the Bighorn Forest 'Fire near Woodrock forest cover very dry, strong southwest wind one hundred men on way to fire Ranger Austin on the job. Estimated cost not less than \$1000.'"

A glance at the clock showed 6:55. Just twenty minutes to make the train. Thanks to the wife's thoughtfulness it could be done. With a hurried goodbye I was on the road again to another conflagration, pondering the while the possibilities of an unusually hard fire suppression job. That section of the Bighorn is heavily timbered and several old "slashings" are in the vicinity.

After a night's ride the Supervisor's headquarters at Sheridan were reached. The Clerk, with a welcoming smile and a hearty handshake, explained that the "big" fire had spread rapidly and that, for greater troubles there were several other fires reported.

Every Ranger on the Forest was handling a fire job and the Supervisor and Deputy had left for the field yesterday. More men, more supplies and more equipment were needed. The Clerk was as busy as a man on the firing line receiving and filling orders, giving infor-

mation to the reporters and routing autos and trucks.

The situation looked extremely serious. More trouble might develop. All the fire fighting equipment on this Forest was in service. As a precautionary measure, the District Office was wired to ship by express tools (from the central cache) sufficient to equip one hundred men and to detail five Rangers from other Forests to this point for fire duty.

A fast twenty mile ride by auto and Dayton was reached, at which point men were being mobilized and forwarded to the fires.

Fisher, the wide-a-woke, energetic Secretary of the Sheridan Commercial Club, was in full charge of recruiting. His efforts were tireless and his competence so evident that it was unnecessary to detail a Forest Officer at this point.

Another twenty miles travel and the main fire camp was reached.

The Supervisor, saying simply, "I'm glad to see you," briefly outlined the situation. The other fires were all manned and were being held and 200 men would be in the big fire by night fall. Asked for the cause of the big fire he stated that conclusive evidence had been obtained



PINES IN THE SAN ISABEL

Not only will many board feet of lumber be destroyed if fires burn up these trees but a beauty value of even greater magnitude will be lost.

and that the man responsible for it was at work with the fire fighters and could be interviewed at any time.

An inspection of the fire developed that it had reached the old slashings and, driven by the wind, was an appalling, raging inferno which apparently no human agency could hope to conquer.

Two hundred men on the job, ten days of gruelling, exhaustive labor and the fire was under control. Twenty-seven hundred acres of green valleys and mountainsides were made black and desolate and the cost of keeping it from other and more valuable timber was over \$6000.

Needless and wholly unnecessary because it came as a result of one man's egotism and carelessness. This man had been clearing land on some patented mining claims, not because it was essential but to provide some-



thing to occupy his time while he remained as a watchman for the property. During the summer the observer from the Lookout had called on this man and the District Ranger had twice visited him and each time he was asked to desist from burning brush because of the severe drought. In each instance he indignantly protested against being "pestered", pointing out that he was a pioneer, had handled fire all his life and knew more about fires and their habits than all the Rangers on the Forest combined.

On a certain Friday he burned three small brush piles, said he looked at them on Saturday morning, concluding the fire was all out, and, as a matter of precaution, he looked at them again Sunday and there was no evidence of fire. Then he went berry picking.

The wind came up, the blackened embers were fanned into flames and the evidence on the ground pictured perfectly what had happened. Burned strips led from each old fire until they joined. Spreading in width as the fire advanced it had considerable front when the slashings were reached.

This man said he knew the responsibility was his, that he was mighty sorry and he was sincerely contrite. He stated that he had learned his lesson and that if he were allowed to go without prosecution he "would never do it again."



PACK TRAIN LOAD OF FIREFIGHTING EQUIPMENT

No small part of the hard work of fighting a fire when it gets started is to supply the crews with food and equipment. All this costs money and effort which might go into constructive work—if fires can be eliminated.

His attitude and sincerity were not questioned, but it was pointed out there were other pioneers who were just as competent and just as cock-sure as he and that individual lessons at \$6,000.00 cash could not be tolerated. He therefore had occasion to tell the court all about it and the passing of sentence had a salutary effect that probably could have been attained in no other way. The day has almost passed when fires are maliciously set, but we still have the criminally careless, the class "who didn't know it was loaded," and this includes many campers who, by lack of absolutely extinguishing camp fires, jeopardize the beauty of the very region they have come to enjoy.

It will be many moons before the fire alarm will remain silent through the season but care and concerted effort on the part of those who come to the forested areas will materially reduce the necessity for sounding it often.

The time is not yet when I may cease to hustle for a train which will take me to the scene of a large fire, and the men in the field must continue to devote their time and energy to suppressing fires when they are so urgently needed on construction work.

Meanwhile all Forest men "preach and practice care with fire," and when that fails the hand of the law falls heavily on those who unloose the fire menace.

## The Ranger Tells the Judge a Few

By Edward P. Ancona

"BILL HAWKINS!" I cried. "Greetings to you, old man! You sure look good to me against that yellow pine background. And the Canyon Station the same as ever! Never mind, Bill, some fine day I'm going to slip down and plant a few tin cans in that foreground and ruin you forever with the Super."

"Very well, Judge, the same to you. Back to the same old spot on the Middle Fork? The big one is still waiting for you up in that pool below the log jam. However," a twinkle crept into Bill's gray eyes, "this is the fifth year, you know, and he will soon know you by that careless way you have of dropping a gray hackle into a pool."

This was plain slander. Ranger Bill knew that I could fish with the best and except when matched against his own peerless skill, I was rarely bested. However, I usually came out a close second on those rare days in the season that he dropped into camp and challenged me to a match round of an hour in the pools and white water of

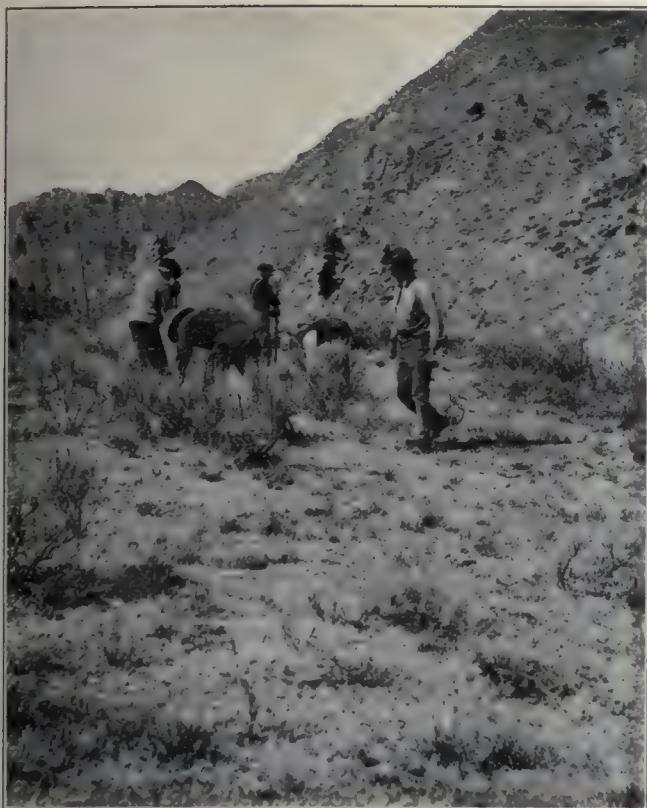
the Middle Fork. I let the matter drop and changed the subject. We were on our way up from the distant city in the desert to the joyous retreat of pine and mountain and water in the Pinto National Forest, in the high mountains far above swelter and heat. Year after year our party returned for refreshment and recreation, dragging our camp outfit in the trailer back of our sturdy gas wagon; and not the least of the pleasure of the return was the greeting we received from the genial Bill Hawkins, Forest Ranger, who ruled over this particular section with a firm but judicious hand.

"How are the fires this year, Bill?"

A shadow passed over Bill's bronzed face.

"Judge, I tell you I'm worried. I've never seen so many strangers up here in the Cristos as this year. It seems as if the last inhabitant of this State has acquired an auto and that about half of them are bent on camping up here. It's dry—deadly dry—and while I warn most





REPLANTING

Years ago a fire stripped the hills shown in this picture. Three decades have passed and no forest cover has returned. This crew is planting seedling trees in an effort to bring back greenery to the hills where once great fir and pine trees towered.

of them, some get by. I keep two guards riding the West Fork and the Canyon Largo and spend the daylight hours on the Middle Fork myself and so far we've kept her in hand. But, Judge, would you believe it, I must relocate the camp fires of half of those I have warned but the day before. Then every day the three of us turn in from six to a dozen small fires, in the daily fire report to the Supervisor, that we put out along the roads—cigarette butts, pipe ashes, the cigar stub of some opulent citizen, a blazing match—all from passing cars and only one chance in a hundred of catching the party that did it."

"Any arrests, Bill?"

"Yes, I'm sorry to say I had to take one individual over to Pineville and have the Justice of the Peace read him the fire law and charge him \$50 for the reading. He departed a wiser citizen. And three parties have been escorted out of the hills for needing a second warning from me regarding leaving their camp fires unattended—and a windy day at that. I do hate to break up a happy family party like that, and the last one, Judge, had in it a little chap who cried because their week up here was cut to two days. I offered to take him over to the Station to spend a week with my little ranger and do you know the lady in the party—well, the lady she wasn't exactly nice in her display of temper over the whole affair. That's

one of the hard things one runs up against in this game of trying to save the big timber for the very people who would thoughtlessly destroy it and who would lose most through its destruction."

"Have the other campers heard of these sudden departures? Oh, yes, and there is much improvement as a result of the discussion. I'm hoping you will spread the good news up the Middle Fork. There goes my telephone, excuse me a minute, Judge."

A moment later he returned.

"Casualties—one brand-new six cylinder auto, a three hundred dollar camping outfit and a happy party turned to despair. Two hundred miles from home. Well, so long, Judge. Guess I'll toddle over the divide and look into it. Jim said he had it under control and that the two men in the party had been on the handles of Forest Service shovels for over two hours and were sore both ways. Guess they've fined themselves about to the limit of the law and I aim to attach the remains of the car. Got a sign for it all figured out and I think most of our troubles with the campers will be over with for some time. Object lesson is a great thing. Hope you hook the big one, Judge. Adios."



LOOKOUT HOUSE

One of the important fire prevention units is the lookout. With millions of acres of forest spread out below the first feather of smoke in any part can be sighted and fighters dispatched to the scene of the fire.



# EDITORIAL

## FORWARD STEPS IN FEDERAL FORESTRY LEGISLATION

LOOKING back upon the efforts of the past two years to secure federal forestry legislation, advocates of the cause can well give thoughtful consideration to the extent to which differences of opinion among themselves on certain points have served to delay the movement as a whole. Unquestionably, the four most important planks in any forestry program for this country are (1) the regulation of the cutting of privately owned timber, (2) the control of forest fires, (3) the expansion of research, both in forest production and in forest utilization, and (4) the extension of state and federal forest holdings.

There is substantial unanimity of opinion on all these planks except the first. But there is a very clear-cut divergence of views as to whether the state or the federal government should have authority to control or prescribe the methods of cutting private stumpage. It is around that point that the fight among the advocates of a national forest policy has centered—and it is right there that the supporters of different views can give common thought to the extent to which their disagreement on that one plank threatens to postpone indefinitely legislation embodying the other planks.

The forest situation in the United States is urgent at too many points to justify a policy of doing nothing until all can agree on every principle involved. There is no sense in delaying action on fire protection because there is division as to methods of cutting, or in restrict-

ing research because opinions differ on some other policy. The critical period in our forest history will be the period between the exhaustion of our old growth, virgin timber and the harvest of our man-grown timber. That period is close upon us and the most immediate protection against it is fire protection and the development, through research, of more complete utilization of our present annual cut. Every year's delay in conserving our present timber reserve brings the day of shortage that much closer.

Going forward with principles with which we are all in harmony involves the surrender of no convictions. Is it not, as a matter of fact, the clearest evidence of wisdom and the highest expression of service to achieve those urgent principles which seem nearest achievement by virtue of common support and to leave disputed principles to separate or subsequent consideration, or if need be, to the development of a more fully informed public opinion? Legislation embodying any one of the four planks or principles mentioned is susceptible of being handled separately and largely on its own merits; or all those principles upon which there is unanimity of support, could be grouped in one bill and presented to Congress as the common advocacy of all. Congress would then have no excuse to delay action on fire protection, enlarged research and extension of federal forests pending settlement of the question of control of cutting on private timberlands.

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## FOREST DEPLETION IN GEORGIA

THE Georgia Forestry Association has come into being at an opportune time. It has a large and urgent field of endeavor before it. In no state in the South proper does forest depletion appear to be proceeding at a more rapid rate than in Georgia. Two of its most important industries are at stake, lumbering and naval stores. These are industries which for years have played an important part in the economic life of the state. Until recent years, they furnished employment to more wage earners than any other manufacturing industry in Georgia.

It is unfortunate for the prosperity and development of the state that the waning of these two ranking industries is taking place at a time when the state's leading industry, the manufacture of cotton goods, is threatened by the ravages of the boll weevil. The decline of these three industries simultaneously unless guarded against by prompt remedial action, will be a set back to the state which will take years to overcome. Already unhealthy conditions are in evidence and while the forests are rapidly being exhausted, they are nevertheless rescuing cotton growers from bankruptcy in some sections

of the state. The farmer, dependent upon his cotton crop and finding it devastated by the boll weevil, is turning to his woodlot as his main means of support.

The situation is one of impending economic menace to the state, because its forest resources are being so rapidly spent. They cannot longer be depended upon to exert a stabilizing influence industrially during periods of stress in other industries of the state. As a matter of fact, conditions are quite the reverse. The forest industries of Georgia are dwindling and not growing industries. From industries of first importance they are slipping back year by year as any industry whose supply of raw material is vanishing, must do.

During a period of less than a decade and a half, the production of lumber in Georgia has declined practically 50 per cent, a loss to the state of over \$13,000,000 annually in the sale of lumber alone. During the same period, the state has lost 1300 sawmills, or 65 per cent of the number operating in 1909. It is impossible to arrive at the aggregate investment represented by these mills, but it must run well into eight figures. In addition, there is the loss of labor, taxes and markets. In the



naval stores industry the shrinkage has been still more marked, that industry having declined in productive vigor 75 per cent in the last twenty years.

Forest depletion, of course, is at the bottom of this situation. There are twenty million acres of forest land in the state, all of which has been cut over with the exception of about one million acres. The extent to which these conditions have affected the wage earners of the state is indicated by the fact that in 1900 the primary forest industries of the state supplied employment to 38,827 wage earners and in 1920 to only 23,141, a decrease of 40 per cent. In both 1900 and 1910, the forest industries of Georgia supplied employment to more persons than all other industries combined, excluding the manufacture of cotton goods.

Much more might be said about the inroads of forest depletion upon the economic progress of this great southern state. It is much more serious than the people of the state appreciate. If its nineteen million acres of cut-over land were being developed agriculturally the future would hold out greater promise, but the area of land in farms has actually declined in the past ten years. The greatest enemy of the future of these cut-over lands is the widespread public apathy and ignorance in respect to the evil progress of forest depletion within the state.

But there are signs of a public awakening. The Governor of the state is fully alive to the seriousness of the situation, as is Dr. Soule, president of the State Agri-

cultural College, and a number of other prominent men. They are whole-heartedly supporting the forestry movement in Georgia and with their help the Georgia Forestry Association will do well to center its efforts on breaking down the wall of public apathy which permits forest fires and other forms of forest depletion to proceed unrestricted and uncontrolled. Opportunities for state development and progress by enlightened utilization of forest land are unexcelled in Georgia. Its wood producing power is tremendous if only put to use instead of being abandoned as an old mine.

Speaking before the forestry meeting at Macon in June, Mr. Austin Cary said:

"My own belief is, and that has thirty years experience behind it, during which I have worked in every timber region of the United States and seen the forests in several European countries, that no region in the world probably has greater natural facilities for producing timber values than the district centering on the Oketinoke swamp. . . . Longleaf and particularly slash pine characterize this region, the latter in my opinion a species which will be recognized in the future for the combination of utility in its products, for its readiness of reproduction and rapidity of growth, as one of the most valuable trees on the earth's surface."

If the Georgia Forestry Association can inspire in the citizens of the state some such appreciation and confidence of the value of their forest soils and their native species, it will have more than half solved the task before it.

## THE RETIREMENT OF ALFRED GASKILL

ON July 1st Alfred Gaskill was compelled to give up his position as State Forester of New Jersey on account of poor health, after serving in that office for more than 15 years. His retirement from the forestry work in New Jersey marks the end of a career of public service which has been rich in value not only to the State but in larger national fields. His quick perception, clear foresight and fearless championship of his convictions have justly entitled him to the leading place he has often been called on to take in forestry.

Unlike most of the American professional foresters, Mr. Gaskill entered the profession not as a fledgling fresh from school, but with a previous considerable experience in business as a background. In August, 1898, he retired from the glass manufacturing business in Southern New Jersey and took up the study of forestry with Dr. Schenck at his Baltimore School. After completing this study in June, 1899, he was detailed by the United States Forest Service to special studies and propaganda on the Pacific Coast. Returning in November he spent the winter at Harvard University in special scientific study. In May, 1900, he left for Europe, where he remained, studying continental forestry and forest conditions and pursuing special courses at the University of Munich, until the fall of 1901.

In January, 1902, he again entered the federal forest service and did a great variety of work, including forest fire, silvicultural, editorial and propaganda assignments. He returned to New Jersey in February, 1907, in the infancy of the forestry movement in the State. From then until his retirement he has been the guiding genius of forestry in New Jersey, first as State Forester and since 1915 as Director of the Department of Conservation and Development, building up an organization and work which ranks high among State Forestry Departments in achievement and stability.

Mr. Gaskill was a pioneer among American foresters in his insistence that adequate fire control was the basis of all forestry. From his earlier work in the Federal service until the present, he has led in the movement to put fire protection first. Likewise he has steadfastly worked to check the widespread belief that all forestry is summed up in tree planting and to urge clear thinking about the questions of lumber needs, forest taxation, and the relations between the public and forest owners.

His work in New Jersey has typified his complete conviction that forestry must have the support of public opinion to succeed, that without it progress would be at best slow and continually subject to serious setbacks. The uninterrupted and marked progress made in the



State under his leadership is ample testimony to his success in the practice of what he has so continuously preached in this respect.

He served for many years as a director of the American Forestry Association and has been an active member of the Society of American Foresters. He was one of the originators and for a long time actively at the head of the Northeastern Forester's Association and has taken

an active part in the organization and work of the recently organized Association of State Foresters.

The hearty good will of his host of friends and admirers, both within and without the profession which he served, go with him as he lays aside the responsibility of public service. Their hope is that his voice may still be heard around the council table when forestry plans and problems are considered.

## SUB-COMMITTEE ON FORESTRY

A forward step toward the adoption through legislation of a national forestry policy following the hearings on the Snell bill last January was taken just as the House adjourned in June for six weeks. Chairman G. N. Haugen of the House Committee on Agriculture then announced the appointment of a sub-committee on forestry, consisting of Representatives G. N. Haugen, Iowa; J. C. McLaughlin, Michigan; J. D. Clarke, New York; J. W. Rainey, Illinois, and M. Jones, Texas. This action was taken after conference with Representative Bertrand H. Snell, of New York, the forestry specialist of the House,

members of the Agricultural Committee, representatives of the National Lumber Manufacturers Association, the American Forestry Association, the pulp and paper makers, the newspapers and others industrially interested in the conservative utilization of the forests of the country. It represents an effort to get away from the differences of opinion that have hitherto blocked progress toward the adoption of a public forestry policy, and to attempt to find common ground on which all advocates of such a policy can agree.

## GEORGIA FORESTRY ASSOCIATION

AS a result of the activities of the Georgia Forestry Committee appointed a year and a half ago by the Southern Forestry Congress, the state of Georgia has recently joined the list of some twenty-eight other states in which forestry associations are working to perpetuate our forests. At a meeting held in Macon, Georgia, on June 6 and 7, a permanent Georgia Forestry Association was organized and began work at once to organize the state in support of a constructive forest policy. The new association hopes that by gathering together the widespread forestry sentiment which exists throughout the state, it will be able to obtain this summer, legislation which will form the first and basic essentials of a strong state forestry department.

In point of accomplishment, the Macon meeting was one of the most important forestry meetings held in the south during the past year. It not only resulted in the formation of a strong forestry association, but it awakened the state to the seriousness of forest depletion as an economic menace to its future prosperity and development. Governor Thomas W. Hardwick has become fully alive to the situation and in a direct and clear-cut address at the Macon meeting, sounded the keynote of the movement to perpetuate the forests and the forest industries of Georgia. He declared that the time has come when the state can no longer shirk its responsibility to protect one of its most vital natural resources from wastage and depletion. He expressed himself strongly in favor of fair and reasonable regulations applicable

to the cutting of timber and to the turpentineing of undersized trees and advocated a state forestry department, supported by special taxation, to be responsible for fire protection and the general promotion of forestry throughout the state.

Among other speakers who strongly supported the movement were Dr. Andrew M. Soule, president of the State College of Agriculture; J. J. Brown, Commissioner of Agriculture of the State of Georgia; Thomas W. Gamble, of Savannah, editor of the Naval Stores Review, and Dr. S. W. McCallie, State Geologist. The meeting, which was attended by about one hundred people from different parts of the state, brought out a surprisingly strong sentiment for immediate action, and while there was some division of opinion on the question of taxation, a spirit of earnest cooperation prevailed throughout.

The American Forestry Association cooperated with the Georgia Forestry Committee in organizing the meeting and in calling public attention to the need of forest action in the state. The Association was represented by its forester, who spent six weeks in the state prior to the meeting. The immediate goal of the new association is to obtain forestry legislation at once, the Georgia legislature now being in session. The forest question is due to come up in the legislature as a result of that body's action a year ago in providing for a State Board of Forestry to make a special investigation and report on conditions within the state. The legislature, how-

(Continued on Page 499)



# AN INDUSTRIAL COMMUNITY AT FORESTDALE, VERMONT

By Austin F. Hawes

[State Forester of Connecticut and Formerly Field Secretary and Forester, National Association of Wood Turners]

NO one has tramped in any of the forest regions of the United States without stumbling onto deserted lumber camps, mute evidence of an industry which sprang up and flourished for a brief period and as quickly withered away. Such a camp, half gnawed to pieces by hedgehogs, with its evil smell of tar paper, old shoes and other refuse, might be taken as a symbol of prodigal America, which has taken its immense material resources as a matter of course and squandered them without thought of the generations yet to come.

To one who has traveled in Europe and seen the comfortable little industries nestled in the center of a forest region which is managed with a view to the permanent maintenance of the industry, our American methods seem crude and wasteful. Most of our large wood using industries are located hundreds of miles from the source of supply. Grand Rapids, for example, became the center of the furniture industry when the city was surrounded by forests. Today the purchaser of Grand Rapids furniture pays a high freight rate not only on the finished product, but in addition probably \$10.00 to \$20.00 freight per thousand feet of lumber used. Only a small part of the lumber which enters a factory comes out as a part of the finished product; most of it comes out as waste, but the man who buys a chair pays the freight on this waste.

It is an unusual satisfaction to find a locality in one of our own forest regions where the forest has been maintained to supply a particular industry. Such a condition exists in Brandon, Vermont, and is well worth a trip up from Rutland for anyone who is interested. The Newton and Thompson Manufacturing Company has been making wood turnings in the little village of Forestdale since 1846, and has gradually built up a forest property of 8000 acres to support the industry. It is said that in their early days they practically supplied New York City with button molds and other wood turnings, used in the clothing industry. This plant has been much enlarged under the able management of Mr. Louis Bump, who is now president of the National Association of Wood Turners, and is making a wide variety of wood turnings. It would probably be a revelation even to a small boy to know how many toy balloon mouth pieces this company makes in the course of a year. If one goes into a Chinese laundry he will see a counting board with colored beads strung on wires. Similar devices are used in many schools. It probably never occurs to anyone to ask where these are made, but if anyone is interested he will find one of the large sources of supply at Forestdale.

The newest addition to this plant is the toy department which is not wholly a turning proposition. Here white pine logs are converted with great speed into

neat little lock cornered boxes and each box is filled with an attractive set of toys, all on a miniature scale. These include such things as a wash tub and scrubbing board, cups, saucers, and other useful utensils such as



GENERAL VIEW OF THE NEWTON AND THOMPSON PLANT, FORESTDALE, VERMONT, WITH TOY DEPARTMENT ON LEFT AND TURNING PLANT ON RIGHT



INTERIOR VIEW, SHOWING TUMBLER IN FOREGROUND. TURNINGS ARE POLISHED BY TUMBLING AGAINST EACH OTHER



STACKS OF FOUR-FOOT WHITE BIRCH SQUARES LEFT IN THE OPEN SEVERAL MONTHS TO DRY BEFORE TURNING



any well regulated doll's home should have. A child who goes to the five and ten cent store and exchanges a dime for one of these sets might well pause to think of the years that have gone into the growing of the material and the labor which has gone into fashioning the material into its finished form.

While Newton and Thompson Company have not always cut their lumber under the most approved methods, they have followed a general policy of building up a



THE ASSEMBLY ROOM IN WHICH TOY BOXES ARE USUALLY FILLED

timber reserve and have done much forest planting. The annual growth on their 8000 acres may safely be estimated at between three and four thousand cords, and as they are not cutting from their own lands more than 1500 cords annually, it is easy to see that the forest capital is now increasing. If this policy is continued, the company will have what is called a normal forest, which is a very rare thing in this country. In other words the forest will have all ages of trees in the right proportion to yield the greatest possible returns. When this result is achieved the company will be practically self supporting as to timber. An effort is being made to increase the proportion of white birch since that is the best wood for turning purposes.

A few of the lots have now been under scientific forest management for nearly a decade and are producing results very satisfactory to the owners. A five acre lot of white pine may be mentioned as an example. In 1912 the State Forestry Department marked the trees which ought to be removed for the betterment of the remaining stand. 153¾ cords valued at \$3.00 per cord on the stump were cut, thus yielding a net profit of \$92.25 per acre. In the fall of 1921 the crowns of the remaining trees had come together in many places. Furthermore the trees had just dropped an unusually heavy crop of seed, pointing to the advisability of making a reproduction cutting. The writer had the opportunity of marking as Association Forester the lot which he had marked eight years previously as State Forester. About 13,000 feet of pine and 3,000 feet of hardwoods or a total of a little over 3,000 feet per acre besides some cordwood were marked. It is therefore estimated that this area will yield from the two cuttings about \$128.00 per acre. No accurate estimate of the remaining stand was made but the trees are tall and straight, and a rough guess is

\$300.00 per acre. The present cutting should result in a healthy stand of small pines which will eventually take the place of the old trees. The policy pursued by the Company of cutting all logs into two foot lengths before sawing enables them to use crooked logs, even including large limbs.

What has all this to do with a forest community, it may be asked. Simply this: Here is an industry which has existed near its base of supplies for three quarters of a century. It now has 200 employees, and can look forward to continued business for an indefinite period without any serious shortage of raw material. There are no labor difficulties here for there is the old time feeling of interest between employer and employee. Many of the men and women in the plant are of the second and third generation of families who have worked with the same company. Most of them own their homes; many of them have money in the banks or in Liberty Bonds, besides owning cars. A system of profit sharing has been introduced by the management which will benefit the men in the more responsible positions.

One of the best features about this thriving industry is the opportunity it gives for home work. Women and older children can put in their spare time filling the little boxes with toys while they are still in the home atmosphere. This is done by taking to each home a barrel of wash tubs, a barrel of scrubbing boards, etc. and a case of boxes. In a day or so the boxes are collected, each one full of a complete set of doll house equipment.



ANOTHER HIGHLY DEVELOPED COMMERCIAL PRODUCT OF THE VERMONT FORESTS

To one visiting this attractive little community at Forstdale there must come visions of the large industrial centers of the country with their rows of uniform gray houses, smoke covered and dingy. It would not be strange if he departed with the feeling that perhaps our gigantic industrial plants amid their squalid surroundings may not, after all, be the highest product of man's ingenuity. Possibly he will see in this comfortable and satisfied community an answer to the industrial unrest which is abroad, and will understand the difference between the contentment which comes from the development of homes under liveable conditions, and the inevitable growing hatred that is fostered by the contrasts of a great city, such as are afforded by the lights of Broadway and the shades of the East Side.



# FOREST PROTECTION PARADE

By W. G. Weigle

ON account of the increased use of the automobile during the last few years many thousands of people are now going out into the mountains to spend their week ends who used to be content to stroll in the park. This increased travel into the forests has materially increased the number of forest fires. On account of this unfortunate condition the President of the United States issued a proclamation declaring April 16 to 22, inclusive, "Forest Protection Week," and April 22 "Golden Arbor Day." During the week April 16 to 22 every person and organization interested in keeping the forests green was supposed to do everything they possibly could to educate the people along the line of being careful with fire while in the woods.

The United States Forest Service office at Seattle staged a big parade on April 22. The following

organizations came out very strong in helping along with the parade:

Boy Scouts, Camp Fire Girls, Mountaineers, United States Forest Service, College of Forestry, University of Washington, Seattle Chamber of Commerce, Automobile Club of Western Washington, Natural Parks Association, Washington Forest Fire Association, and the Washington State Forester.

The parade was made up of flag bearer mounted, followed by numerous floats, one of which, made up by the United States Forest Service, represented a large mountain with snow capped peaks, timbered slopes, a village in the distance, and a large forest fire represented by an area actually burned over and still smoking. Another, by the Forest Club, carried a fire lookout mounted on a truck with the lookout man taking observations. Another



"SMOKES" REPRESENTED IN THE FOREST PROTECTION PARADE. ALL RIGHT WHEN USED WITH CARE, BUT A MENACE IN THE HANDS OF THE CARELESS.



ANOTHER SECTION OF THE PARADE IN SEATTLE SHOWING THE GIRL SCOUTS CARRYING THEIR ATTRACTIVE AND VERY MUCH TO THE POINT SIGNS



by the same club had a real miniature logging outfit; another the right and wrong way to build camp fires, etc. After these came the Mountaineers with a large pack train of mules, followed by the Fort Worden band; then the Boy Scouts, Camp Fire Girls, College of Forestry, etc. Throughout the parade numerous signs were carried bearing the slogans: "Keep the Forests Green," "Help Prevent Forest Fires," etc. Many suggestions along the line of fire protection of a comic nature were carried out throughout the parade, such as a Mountaineer walking inside of a pasteboard match and cigarette, a large pipe carried on the shoulders of two men; four Boy Scouts on bicycles carrying a stretcher containing the

prostrate body of "Old Man Carelessness" and a band of black, tattered and torn fire fighters returning from a forest fire in a terribly dilapidated condition, accompanied by two Red Cross nurses.

The Boy Scouts came out 1200 strong and the Camp Fire Girls were a close second. Several cash prizes were offered for the best suggestion illustrating fire prevention. The first prize of \$20 was awarded the Forest Club of the College of Forestry, University of Washington; other prizes amounting to \$40, were awarded to the Boy Scouts, Camp Fire Girls and Mountaineers.

A moving picture was taken of the parade and shown in a local theatre during the week following the parade.

## THE CUTTER PIONEER GROVE

**R.** B. MILLER, State Forester, Urbana, Illinois, finds a growing interest even in the smaller towns for areas which are suitable for parks and breathing places. One very much out of the ordinary was found at Princeville, Illinois, in Peoria County, a small town not far from Peoria. The State Forester learned of this through correspondence with Charles Forrest Cutter, Yale University, class of 1875, now residing at Low Fell, near Newcastle-upon-Tyne, England, and is able through the kindness of Mr. Peter Auten, a banker of Princeville, and a relative of Mr. Cutter, to secure the photograph of Mr. Cutter's pioneer log cabin which is here reproduced just as it stood a few years ago.

This cabin was built by each of Mr. Cutter's friends bringing in a log and was for two years used as a meeting place for the Old Settler's Union of Peoria and vicinity. Everything was made just as primitive as it was in pioneer days, even to the eave troughs made out of round poles, hollowed out enough to carry off the water to a primitive cistern. Here Mr. Cutter brought his books and curios and used to spend hours there in reading and receiving his friends.

His idea in retaining this property for so many years was to show a bit of virgin woods in a state where timber was being rapidly cut off, as well as honoring the memory of his parents. His father was Dr. Charles Cutter and the old Cutter homestead which stood in the northwest corner of the town was one of the first frame buildings in Princeville, lumber for its construction being carted from Chicago.

Mr. Cutter wishes to do something for forestry in the disposal of this small tract but there are many difficulties, as it is too small for forest school purposes or for making into a forest preserve under the Illinois law. It is subject to damage at the hands of prowlers at the present time as there is no regular caretaker who can look after the property. It might go to Princeville as a memorial park if the town would provide funds for its improvement and upkeep, but Mr. Cutter is such an ardent conservationist that he has never allowed any cutting, so that landscaping might not correspond with his ideas. The tract is ideal for a small town park if these difficulties could be properly adjusted.



A FRIEND OF FORESTRY

Mr. Charles F. Cutter (Yale 1875), and his pioneer log cabin at Princeville, Illinois.

Princeville is in Princeville township and until 1837 was called Prince's Grove, there being two other good tracts of timber in Peoria County at that time, White's Grove and French Grove. The general surface of the township is rolling. It had considerable timber originally and is well watered by small streams. Mr. S. S. Slane, a pioneer resident of Princeville, 85 years of age, has a tract of 160 acres on the edge of town along the Sante Fe Railroad track, mostly white and black oak. He states that in 1848 the stand was mostly rock maple, the oak having come in since that time.

Another interesting township in Peoria is Jubilee, which was once heavily timbered through the center, and contains in the southeast corner a tributary of Kickapoo Creek. In this part there was a tract of several hundred acres belonging to Jubilee Episcopal College, founded in 1839, by the Protestant Episcopal Church, and this tract is shown on some of the older maps.



# Novel Trees And Forest Products

By S. J. Record

Professor of Forest Products, Yale University

## THE ROYAL PALM

The cocoanut palm is said to be the one tree able to supply everything man needs for his existence—food, clothing, and shelter—a rather primitive existence, to be



A ROYAL PALM

This fine tree, which is comparatively young, overlooks the harbor of Marvel, in Cuba.

sure. Not far behind is the royal palm or *palma real* as the Spanish speaking people call it. It does not furnish food for man, though it does for his pigs, but it meets so many important needs that the natives hold the tree in the highest esteem and rarely destroy one. To the traveler in Cuba they are one of the most conspicuous and beautiful features of the landscape. The trunks look like tall pillars of cement, usually swollen at the middle, and bearing at the top a giant tuft of plume-like foliage attached to the shaft with a long bright green cap. The trees grow in all kinds of soil from swamps to hill tops, though naturally they make their best development in rich ground. They are wind-firm and stable and stately avenues of them all unprotected have endured the storms for generations without a loss. Woodpeckers drill through the outer layer to build their nests inside but the trees seem none the worse for the damage.

The royal palm is almost indispensable to the natives, and every portion of the tree finds a use. The leaves are especially useful, and cutting them from the top of the lofty trunk calls for skill and daring. The climber

seems to think nothing of it, however, and by means of two loops of rope makes his way quickly to the crown and harvests his crop.

The giant leaves consist of three parts, the basal sheath, the thick flattened stems, and the plume-like blade. The latter supply the roofing material with which the poorer classes in country and small villages thatch their houses and barns. The leaves are also made into fences, and serve as shade over the tobacco fields. Large quantities are used in closing the ends of the bags filled with charcoal, the all-important domestic fuel in the cities.

The leaf stems make good fire wood. The sheath or yagua, in the vernacular, is large and flexible like leather, and fills many uses. It is the universal siding for the thatched hut—set on end and held in place by means of horizontal wooden cleats or poles tied to the house posts. The yagua is the farmer's wrapping paper and tobacco is bundled in it. It can be folded up like birch bark into receptacles for washing clothes, boiling water and cooking. The inner surface is covered with a thin white layer like parchment which can be peeled off in large flakes and used for writing paper or for rolling cigarettes.

The fruit is a small hard nut borne in clusters. There are three stages from the flower to the ripe fruit on the tree at a time. The clusters of mature fruit are gathered,



Photograph by S. J. Record

A CUBAN FARM HOUSE

This home of a small farmer in Cuba is built entirely from material supplied by the big Royal Palm Tree in the background.



the nuts fed to the hogs, and the finely divided tough stalks tied into bunches for brooms. The native doesn't go to the trouble to pick off the nuts—he hangs the bunches on the pig-sty and lets them fall gradually of their own accord or hastens the process by a daily vigorous shake.



Photograph by S. J. Record

#### ROYAL PALM THATCH

The roof covering of this Cuban shack is made of Royal Palm leaves sided with the leaf sheathes which are held in place with strips of the trunk.

The palm trunks are not like ordinary wood but they produce valuable material for buildings and bridges. The inside of the trunks are loosely fibrous or hollow but there is a thick outer casing that is very hard and strong. It



Photograph by S. J. Record

#### A ROYAL PALM BRIDGE

This small bridge in Cuba is made of the hard outer casing of a trunk of a Royal Palm tree.

is also made into walking sticks and fancy articles and takes a beautiful polish. The hard strands which run

through it, in the familiar manner of a cornstalk, show on the surface like the quills of a porcupine. End sections show these strands as conspicuous dark dots and thin layers are much used for special designs in marquetry.

#### OYSTER WOOD

The writer does not remember ever having seen the name "oyster wood" in print, certainly not in the common reference books, but it is nothing new to some of the dealers and cabinet makers.

The name oyster wood was originally applied to the European laburnum from small logs of which thin end sections were cut and used for veneers in cabinet work. Owing to the difficulty of getting laburnum other woods were substituted. The writer recently examined an old table top which had a central portion of laburnum and the remainder of locust.

The Cuban oyster wood is what is commonly known there as yaiti or aite (*Excoecaria lucida*). The tree is small, rather rare, of poor timber form but has a very fine-textured wood that lends itself readily to carving. The heartwood is a sort of olive brown with peculiar eccentric layers of darker shade that give a very peculiar and pleasing appearance. The sapwood is white and rather thick.

The wood as prepared for use is sawed into layers about one-sixteenth of an inch thick. The best effect is produced by cutting at a slant instead of straight across the end of the log. Very striking effects can be produced by using such material for borders and special designs.

#### KIRI-GAMI OR JAPANESE VENEER PAPER

The Japanese manufacture a decorative material by gluing very thin veneers of wood onto a paper backing. Since the wood commonly used is Paulownia or Kiri, they call this product Kiri-gami (Paulownia paper) though some of it is put on the market under the name of Kiri-kyogi-gami, kyogi meaning veneer.

The thin veneers used are nothing more than shavings made by hand with a big plane, such as carpenters use, only larger. The blade is about six inches wide. A long bamboo spring pole may be used to supply an even pressure, in which about all the workman has to do is to push the plane back and forth over the block and gather up and bundle the shavings.

Paulownia or Kiri is a very rapid-growing tree, sometimes planted in this country for decorative purposes, and has a light, soft and easily worked wood that is much in demand in Japan for a wide range of uses. For the purpose of veneers the trees are cut in winter and the logs stored in cellars where they will not dry out before needed. They are then cut into bolts 2 or 3 feet long, split into quarters, and the bark and defective parts removed. A quarter is then placed in a clamp and shaved along a split side.

After the shavings come off whole they are bundled 50 or 60 together and boiled for about 20 minutes in dilute



caustic soda, after which they are immersed for a few minutes in a dilute bleaching solution and washed in fresh water. Then, in order to neutralize any alkali and prevent discoloration, they are thoroughly wetted with acid water, one part of sulphuric acid to a thousand.

The wet shavings are then spread on a smooth laquered board or glass, and the edges lapped slightly to make up a panel. The water is wiped off, glue put on, and the paper backing applied. The sheets are then hung up to dry and are later smoothed with a hot iron.

Fancy figured paper in colors may be used for the backing, as the designs show through the silvery tissue layer of wood with artistic effect. Its veneer surface may also be printed on readily.

The manufacture of Kiri-gami is confined to Yamagata City in northern Japan. There are 10 establishments with 300 employes. Seven million sheets, each two by three feet in size, were made in 1920. The value of a sheet is from 1 1-4 to 3 cents, depending upon quality. The principal use is in the domestic trade for surfacing decorative boxes and fancy containers; very little is exported. If it could be had in strips of sufficient length it might be used to good effect for wall paper and interior decoration in this country.

### TREE FERN COLUMNS

Shown in the accompanying cut are two columns, each of which was manufactured from the trunk of a tree fern from 10 to 16 feet high and about 10 years old. They came from the heights of Fort de France, from the place called "Balata," near the Pitons du Carbet, Martinique, French West Indies. They show ash-colored marks from volcanic cinders which have penetrated under the action of the rain into the fibrous tissue of the tree. The columns have also been pierced with vines, the exposed light-colored wood of which shows in contrast with the dark brown of the fern.



Photograph by S. J. Record

### TREE FERN COLUMNS FROM MARTINIQUE

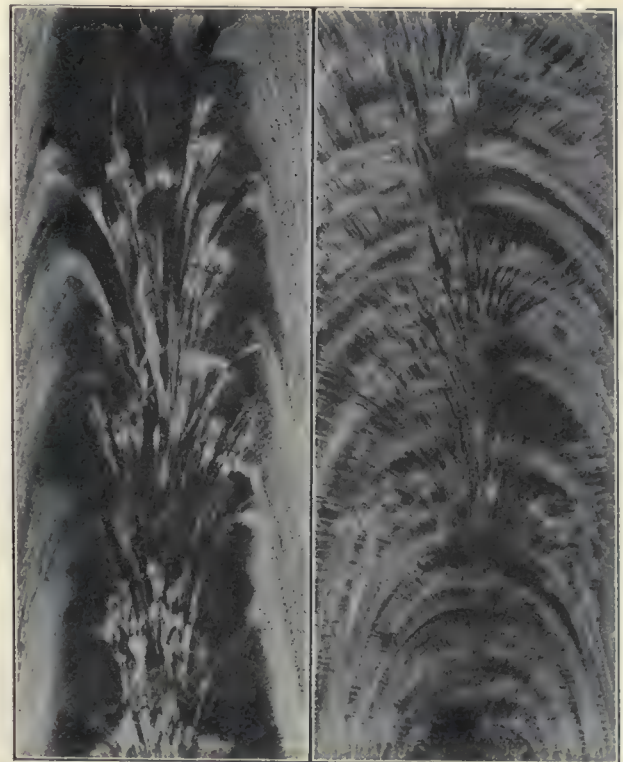
40 to 50 feet and sometimes more. The trunks of these trees, when old and fully seasoned are cut square and used as posts for arbors, or as piles, or as beams for

houses in the country. When fully matured it is a very durable wood and is considered incorruptible when exposed to humidity.

Some artisans fashion from the roots flower pots and various novelties which are more or less artistic, and have, as a rule, an original style of their own.

### CROTCH MAHOGANY

Some of the most beautifully figured mahogany comes from crotches of big branches. Such material is in much demand for use in the form of veneers for panels in doors, furniture and cabinets and for picture molding. Very often the veneers are matched end to end to make long panels for bedsteads, pianos and tall doors.



Photograph by S. J. Record

### FANCY FIGURE

Long, narrow crotch producing plume mottle or feather curls. A wide crotch without much distortion of the wood.

The figure of the wood is largely influenced by the width and shape of the crotch, whether U-shaped or V-shaped. The effect in either case is to distort the growth but the closer the branches are together the more the woody layers are kinked and folded. Examination of such wood under a microscope shows that the fibers are buckled and folded from the enormous pressure exerted upon them. This pressure is the result of crowding—too many cells trying to reach their normal development in cramped quarters.

Material of this kind is useless for most of the purposes to which wood is put for in positions of strength there is a premium on straightness of grain. A serious defect under one standard becomes a high merit under



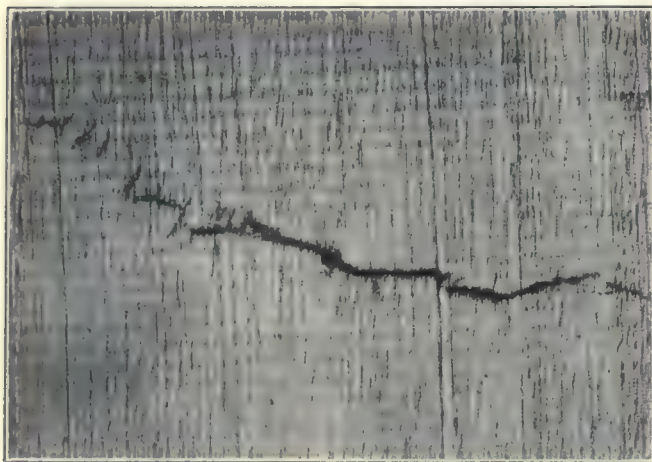
another. Beauty and utility are often wide apart in their demands.

Along with the distortion of the structure in the wood of a crotch there is usually a very pronounced deepening of the color due to excess deposits of pigments and infiltrates. This shows in marked contrast to the adjacent wood and adds greatly to the decorative quality. A long narrow crotch may give the effect of a fountain or tufts of beautiful plumes.

Often the wood of crotches is defective and where the branches grow too closely together there is danger of the bark being caught and covered by later growth. This is what dealers in logs call "in-barking", a general term applying to all cases where bark is caught in the wood, as in healed-over wounds and fluted trunks.

### HEART BREAK IN WOODS

It is not at all unusual to find in certain woods that cross-breaks have occurred in the heart of the logs. This defect is very common in African mahogany and during the war the writer saw hundreds of boards, otherwise perfect, culled because of these breaks. They vary in length or depth from a few inches to a foot or more, and there may be several of them close together. They are variously referred to as heart breaks, cross breaks and compression failures.



A CROSS, OR HEARTBREAK

Heartbreak or compression failure in a piece of mahogany.

The cause of this damage has never been positively determined. Some believe that it occurs in the standing tree as the result of heavy wind storms. Others are of the opinion that the breakage results when the tree crashes to the ground when felled for lumber. The latter cite the fact that the breaks are usually fresh looking and show no pronounced discoloration or deposits such as one would expect to find in old injuries, particularly in a wood that contains as much gum as mahogany does.

Whatever the cause the defect is very serious and may be overlooked until the later stages of manufacture. The writer has a section of an airplane wing beam of Sitka

spruce which shows two of these breaks. In the case of mahogany a break which is scarcely noticeable in the lumber before it is finished will show up badly when filler and stain are applied.

These breaks are the sign of rather soft and brash wood and it seems the trees in which they are found are always large. Some of the old Sitka spruces which produced clear light-weight lumber were found to be unfitted for airplane construction because their wood was lacking in the essential toughness and resilience.

### ASH-SPLINT PACK BASKETS

The most serviceable pack baskets used in the North Woods are made by the woodsmen during their spare time. They weave them from splints from a slow-growing ash tree.

The basket-maker selects a straight clear-barked brown ash tree growing in the forest, fells it and peels off the bark. Any season of the year will do, but the bark peels easiest in late spring or early summer.

The wood of the ash-tree is made up of alternating layers of soft porous material of the spring growth and tough fibrous material of the summer growth. By hammering hard all over the peeled log the layers can be separated. So the woodsman proceeds to pound the trunk with the back of his ax until the growth layers loosen up. A single hammering will loosen from two or three to as many as ten layers, depending upon the vigor of the blows. After all the loosened layers are removed the process can be repeated.

The layers are torn off in long narrow strips about three-quarters of an inch wide and rolled up tightly. In this form they can be stored indefinitely. All that is necessary to render them pliable and fit for weaving is to soak them in cold water for an hour or so. They will then become very pliable and withstand almost any amount of bending and twisting without cracking or breaking. In fact before wire came into use for the purpose it was common practice in some parts of the country to use ash splints for tying hay bales.

### UNTREATED SPOTS ON PILING

Users of creosoted piling have occasionally been greatly puzzled on observing shipworms boring through heavily creosoted wood. Experiments with sheathing creosoted timbers with untreated planks have demonstrated that if the microscopic larva can get a start in the untreated wood the worm which develops becomes resistant to creosote poison and can bore into the heavily impregnated wood. If there are any spots left untreated on piling and wharf timbers they will permit the young shipworms to obtain a foothold and eventually destroy the whole timber.



# PARASITIC ENEMIES OF TREES AND PLANTS

By Dr. R. W. Shufeldt, C. M. Z. S., etc.

(WITH PHOTOGRAPHS BY THE AUTHOR)

OF all the various lines of study and research in natural history none is more interesting than that branch of general botany dealing with abnormal plant growths that are the result of injuries caused by insects. Many are more or less familiar with them as they occur

History came to be published his readers found it stated therein that a gall on a tree was produced at night, and by some kind of a fly, the larva of which subsequently ate up the gall. Others of those times believed this, while still others claimed that tree galls were the home of certain worms or spiders. Prophecies of what the ensuing year would have for people of the times and of events that would come to pass, were based upon such data—that is, whether worms, spiders or flies were to be the more numerous during that particular year. The matter did not rest here, however, although for a long time some very ridiculous notions about galls on trees and plants were rife. For instance, a poet, who was also a doctor of medicine—one Redi of the 17th century, held that all trees and plants were endowed with a soul—a vegetable soul—and that that phytological phantom was not only responsible for flowers and fruits and all their



GALLS DESTROYING A FLOWER

Fig. 1—This quite unique illustration shows a specimen of Black-eyed Susan (*Rudbeckia hirta*) in its last stages of destruction by masses of dark green galls, each as big as a horse chestnut.

on the twigs, leaves and other parts of trees and plants, for they are conspicuous objects when seen in the forest and elsewhere at various seasons of the year, from early spring to late autumn. They have long been known to foresters and students of plant pathology as galls. Even as far back as the days when Pliny wrote, that is, along in 50 to 60 A. D., that famous naturalist of antiquity had paid some attention to them; and when his Natural



TICK TREFOIL SHOWING HYPERTROPHY

Fig. 2—Hypertrophy in plants is not a common disease, and the case here shown is one of extreme rarity. It is the only specimen discovered by the author after rambling through North American woods and fields for more than half a century.





STRANGE DISEASE OF PLANTS

Fig. 3—Another view of the manner in which hypertrophy attacks a tick trefoil showing the seeds distinctly. Note how curiously the stem is enlarged.

parts coming into existence, but that galls, with everything that was to be found in them, were produced in a similar way, that is, through the agency of the "vegetable soul." The fact will be appreciated that these early students and observers had never noticed the female insect deposit her eggs in such places on plants and trees as where the galls subsequently appeared; so it was contended by many that she deposited her eggs in the ground about the roots of trees and plants, and that, later on, the eggs thus lain were carried by the sap of the plant or tree up into the leaves, twigs and small limbs; passing along as far as they could, they finally lodged, and galls formed in those places as a consequence.

Along in 1760 a closer observer and more intelligent writer appeared in the field. I refer to the Italian naturalist, Filippo Arena, who had given to the world some useful facts on the cross-pollination by insects in the case of plants; but he carried the discovery too far when he claimed that trees and plants produced galls, in that the insects that came from them might be sufficiently numerous so that cross-pollination should not fail during any particular year for the lack of a supply of those insects responsible for it.

Finally the true cause of a plant gall was announced, and this by the Italian anatomist and microscopist, Marcello Malpighi, who, towards the close of the 17th century, pointed out that galls on plants and trees were caused through the punctures made by certain insects; and that as swellings they were due to those punctures, just as swellings on our own bodies result from the sting of bees or other insects capable of inflicting a venomous wound. Here the matter now stands, little having been added to Malpighi's theory during recent years, although the subject has been investigated and extensively contributed to by not a few able writers. At this writing, hundreds upon hundreds of plant galls are known, and have been more or less fully described by the various investigators of the subject. They are now known to occur on plant growths of every description, even many fungi coming in for a share of them. Few are aware of the fact that potatoes are merely fungus galls on the roots of that plant; and others of them on our leguminous plants are chiefly responsible in producing the nitrogen of the air, in that it may be utilized by growing plants.



A LEAF-CROWNED STEM OF A GOLDENROD

Fig. 4—Not only does goldenrod exhibit the curious condition here shown, but it likewise often presents elongate galls on the stem of the plant, as illustrated in another figure.



Few, very few, of the galls caused by insects on plants are of any use to us—indeed, those occurring on oak trees are practically the only kind that possess any economic value, they being used commercially in enormous quantities in the making of various inks, and in the processes of dyeing and tanning.

The study of these varied and curious excrescences especially appeals to foresters, to zoologists, and to botanists, and for the very good reason that the field contains so much that has, as yet, in no way been worked out; it actually bristles with problems unsolved. Then too, we are compelled to study them, in that we may derive the necessary knowledge to properly care for and protect our useful as well as ornamental plants. Again, a knowledge of them is essential to the student of food products in the plant world and their cultivation, as not a few of them are nothing more than fungus root-galls, those of the legumes being of bacterial origin.

Galls are produced by insects belonging to very different orders, in so far as their classification goes. Various genera of mites produce some of them, as do beetles, scores of flies representing upwards of twenty genera, not to mention the *Hymenoptera* or Saw-flies, especially those of the family *Cynipidae*, in which we have

about fifteen other genera, those of the genus *Cynips* having been most exhaustively studied.

Dr. Frank E. Lutz, in his excellent little work, the "Field Book of Insects," states that "if the galls are inhabited, a clue to the makers may be gained by a study of the inhabitants. Mites have four pairs of legs, at least when full grown; no wings; and are very small.

Aphids have three pairs of legs, and they sometimes have no wings. Galls made by both of these groups are usually open. Saw-flies have thoracic, and usually distinct abdominal legs; their galls usually have a large hollow on the inside. Gall-making lepidopterous larvae have thoracic but no abdominal legs. It is not so easy to distinguish *Hymenopterous* and *Dipterous* larvae; and it should always be remembered that galls may be inhabited by creatures which did not make them—parasites of the makers and also inquiline, 'guests' which avail themselves of the abundant food, but do not directly injure the maker of the gall.



BLACKBERRY GALLS GREATLY DISFIGURE THE PLANT

Fig. 5—All parts of a blackberry bush beyond the site of the gall invariably die, while, close to the gall healthy stems are to be seen. One of these, bearing buds and a blossom, was present, as shown in this particular specimen. Insert cuts: A., Gall-gnat (female), a species of *Cecidomyia*, about natural size; it makes galls on some of our annual plants. B., The Misnamed Gall-moth (*Paedisca salignana*). C., The same with closed wings. D., Natural size of B. E., Larva. This species makes galls on the goldenrods.

Some galls are complicated communities. We speak of creatures 'making' the galls; the plants really do this, acting on some (not understood) stimulus furnished by the animals. It is exceedingly curious that insects which are so similar that they may be distinguished only with difficulty cause such different and distinctive galls. In



addition to the unknown chemics of the process, the gall-causing instinct is one of the most mysterious things in entomology."

Galls of various forms and sizes are gathered from many different kinds of trees indigenous to many countries. Thus in commerce we have the Chinese galls, the Bokhara galls, and so on. The best galls yield from sixty to seventy per cent of gallo-tannic acid, and are known as the white, the green, and the blue galls, and the oaks are great producers of them. Sometimes the irritation caused by the presence of the larva is responsible for their existence, while, as a rule, they are produced by a virus deposited by the female when she places her egg. In Asia Minor, Syria, Persia and in adjacent countries, a special species of oak (*Quercus infectoria*) grows abundantly and furnishes the greatest number of galls for the trade. A species of *Cynips* is responsible for their production, and this insect deposits its eggs in the tender shoots of the tree.

We are informed by an authority at hand that "galls are inodorous, and have a nauseously bitter and astringent taste. They are nearly spherical, and vary from the size of a pea to that of a hazelnut. When good, they are of a blue, black or deep-olive color. They are also

termed *nutgalls* or *gallnuts*." According to some British authorities, one of whom is cited in the *Encyclopædia Britannica* (XII., 574), "in the autumn (also on oak leaves) are found those curious flat brownish *galls* commonly called 'oak spangles,' which by many are taken for fungi and have indeed been described as such." And

it was Tennyson who said, in his poem on "The Talking Oak:"

"I swear (and else may insects prick

Each leaf into a gall)

This girl, for whom your heart is sick,

Is three times worth them all."

Lutz, in his

useful little work referred

to above, pre-

sents us with

some eighty-

six cuts, giving

various exam-

ples of those

galls we find

on such trees

and plants as

the conifers,

the poplar and

cottonwood, the

willow, hickory

alder, oak, elm,

hackberry, the

witch-hazel,

tulip-tree, maple,

sumac, rose

raspberry and

blackberry,

crataegus, cin-

quefoil, wild

cherry, grape,

touch-me-not

linden and

basswood,

huckleberry,

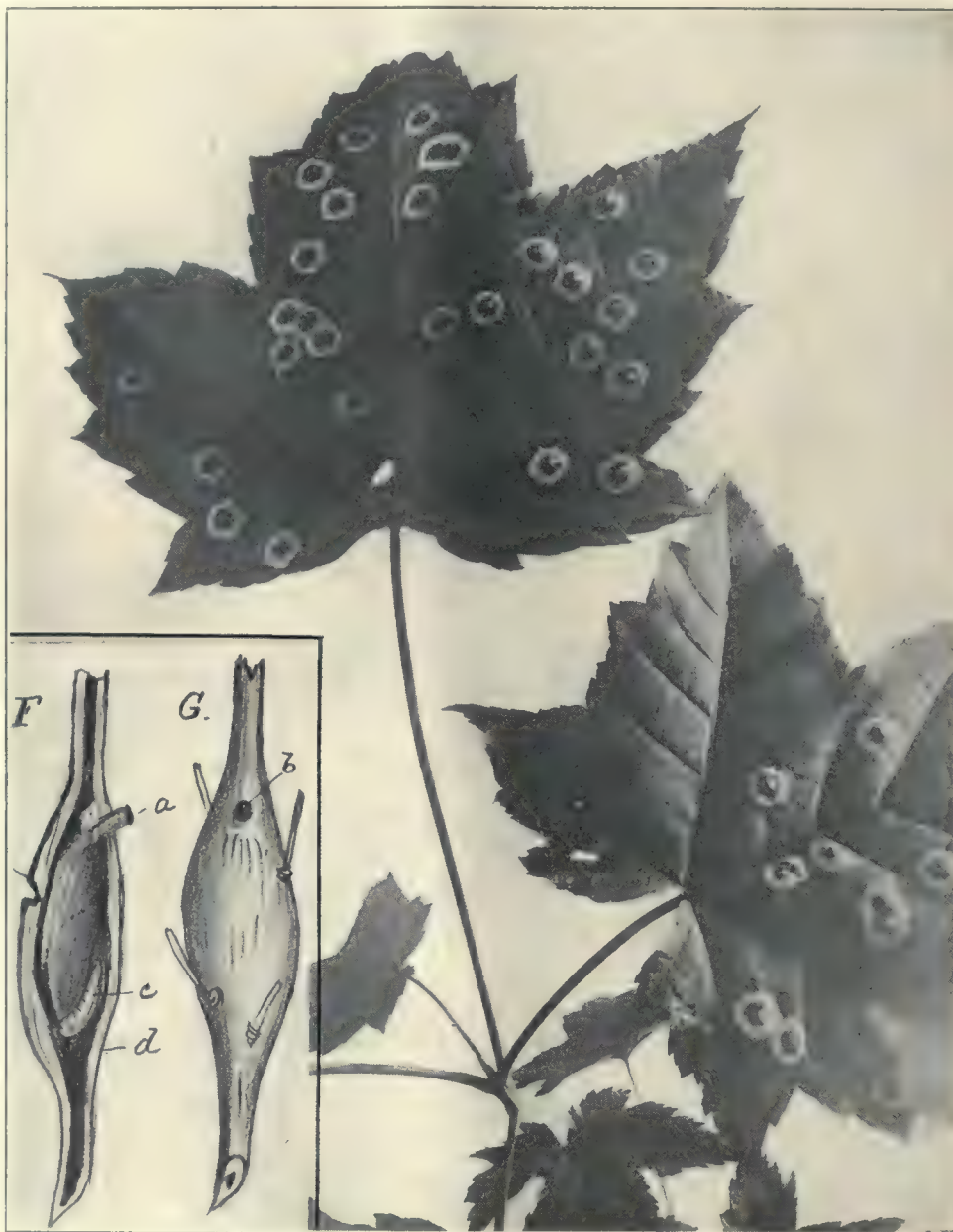
wild lettuce,

goldenrod and

ash. They are

extremely characteristic and instructive, and as arranged on the plates, not readily mistaken for another.

Further on I will give some of these growths, reproduced by my camera from the actual specimens; but only a few can be thus presented, for the fact must ever be borne in mind that simply hundreds of these curious



LEAVES OF MAPLES SHOWING RED AND YELLOW SPOTS

Fig 6—So thick are these ocellated gall-spots on the leaves of some maples that they destroy the leafage of the entire tree; a tree so affected may be recognized at a considerable distance. Insert cuts: F and G, Gall on goldenrod made by *Solidago* gall-moth. *a*, opening; *c*, larva; *d*, burrow. C on G opening seen from in front. Redrawn by the author from Riley.



growths are now known to the students of them, have been described, and a very large number of them figured. For instance, over fifty different galls occur on the willow alone, and more than three hundred have been listed for the oak. All these have received their technical, scientific names, and have been duly classified in works on the subject

In none of the several works before me do I find any description of the galls that occasionally occur on our well-known "black-eyed Susan" or cone-flower (*Rudbeckia hirta*), an example of which I came across some three years ago, in a meadow a few miles west of the National Capital. Upon returning to my home I at once made a life-size negative of the specimen, and a print from it is reproduced in Figure 1. The galls were large, of a dark green color, shaped something like young tomatoes, being bunched in groups of from two to four on the extremities of the stems of the plant, where they destroyed both flowers and leaves.

While botanizing in the same city during the summer of 1920, I discovered a remarkable specimen of trefoil. The plant had a height of some four feet, and was in no way crowded by the surrounding vegetation. Its remarkable stem at once attracted my attention; and I should not have recognized its genus had I not observed that it bore the well-known seed-pods of some species of tick trefoil (Figs. 2 and 3). On the lower part of the plant in Figure 2, quite a number of the leaves show very well; and their lanceolate form, taken in connection with the form and structure of the seed-pods, the locality and so on, it is quite possible that the species is *Desmodium bracteosum*. Recognizing the very unusual condition of the plant, I collected it, or nearly as much of it as would fully exhibit the pathology it presented, and made the two photographs here shown. The specimen was then taken to Prof. Paul D. Standley, the botanist of the Smithsonian Institution, who pronounced the case to be one of "hypertrophy;" but he had never before seen anything of the same character in tick-trefoil. He was not quite certain as to the species, and declined to commit himself on that point. The specimen was accepted for the collection representing plant pathology in the United States National Museum. The superior extremity of this specimen is shown in the reproduction of my photograph in Fig. 2; while in Fig. 3, we have the upper third of the plant, almost down to a point where the disease commenced. This cut exhibits quite a number of the leaves—their form, number and arrangement—to be taken into account and considered. Gray points out in his botany that in *Desmodium bracteosum* the character of the species is that it is "very smooth except the pannicle; stem straight; leaflets lanceolate-ovate and taper-pointed, green and glabrous on both sides, longer than the petiole, the conspicuous bracts and stipules 1.5 cms. long; joints of pod rhomboid-oblong, smoothish." He figures the pods, and they agree, as does the form of the leaves,

with the corresponding parts in the specimen under consideration.

How this condition came about in a specimen of tick trefoil would be difficult to say; and surely it would appear, from what we know of such things, that it was not from the puncture made by any parasitic insect. That such happenings are worthy of record there can be no question; for knowledge of fact is knowledge, quite irrespective of kind, and no one can predict as to when it may prove of value.

Doctor Howard presents us with two or three valuable and interesting chapters on the Gall-Flies; the



CURIOUS GALL ON OAK TREES

Fig. 7.—Several of these galls may sometimes be found on the twigs of the same limb, and they vary considerably in size. The ones here shown are above the average in point of size. Sometimes, as in the specimen here shown, this gall does not seem to destroy the twig to which it is attached.

Gall-Gnats, and the life history of a Gall-Gnat in his work "The Insect Book." In speaking of those *Cynipoids* known as Gall-flies, he says that "those which make galls lay their eggs in the tissues of the growing plant and the larvæ, when hatched, feed upon the plant cells and their contents. A very slight gall deformation may result; but in the majority of cases there is a rapid growth of plant-cells and a curious enlargement of variable shapes which is called a gall.

"The nature of a gall has long been a disputed point.





LARGE "APPLE GALLS" ON LEAVES OF AN OAK

Fig. 8—These beautiful green galls are also called "oak galls" and "oak apples;" they are made by a gall-fly called *Amphibolips coccinae*, here shown at *a* in the insert, with a cross giving its actual size. The interior of one of these galls is *fibrous*. Other oak apples are spongy inside, as seen in Fig. 11. Such oak apples occur on the red-oak or black-oak leaves, while the fibrous ones are confined to the scarlet oaks. The insect shown at *b* is *Amphibolips spongifica*, and it produces the spongy oak apples. *c* (nat. size), another species of gall moth (*Gelechia gallae-solidaginis*), the moth that produces the galls on some of the goldenrods.

It was at first thought that it was a purely vegetable growth and that the little grubs within it were the result of spontaneous generation. Later it was supposed that galls were caused by the punctures of insects and the injection of a poisonous liquid. With the true gall-flies, however, the gall apparently does not commence to form until after the egg hatches. It is supposed that the larva secretes a liquid which causes the abnormal growth of the plant, the plant cells which are most active in growth and subdivision being directly affected.

"The egg of the gall-fly is slender, and has a very long petiole which is six to ten times the length of the egg-body, and this is inserted by means of a very long, curiously formed ovipositor. A good account of the method of oviposition reported by Riley from observations made by Pergande will be found in the Proceedings of the Entomological Society of Washington (Vol. iii., pp. 260-263)."

Doctor Howard tells us that "about fifteen hundred species of this super-family have been described," and it must be remembered that that was fully twenty years ago, at which time he further remarked that "the full development of none of the American gall-making *Cynipods* has been studied with the care which this subject should have, and doubtless there are many interesting and important facts yet to be discovered." Be this as it may, Doctor Howard has given us a deal of information about these extremely curious little insects and their ways, especially in regard to the time of their appearance during the year; on the parthenogenetic generation which



is to be sometimes observed among them; that a particular part of the plant attacked is always affected by the same species of fly; and that "the parasitic gall-flies live as true internal parasites in other insects, mainly plant lice and the larvæ of dipterous insects"—together with many other facts. His "Life History of a Gall-Gnat" is brimful of interest, and a well illustrated contribution to the subject, most worthy of careful study. In it he makes the statement that "the most famous member of this group is the so-called Hessian Fly (*Cecidomyia destructor* Say.). This species lives, in the larval state, in stems of wheat, and annually damages the wheat crop of the United States to the extent of many millions of dollars. It is supposed to have been introduced into the United States in the straw brought over for bedding by the Hessian troops during the War of the Revolution. Hence the popular name."

We have often observed those peculiar little whitish galls on the willow trees; they are terminal on the twigs and shaped like small cones—indeed they are known as willow cone-galls. It is said that a minute gnat deposits her eggs on the very tip of the twig she selects for the purpose. Very soon it hatches, and the gnat at once commences to feed upon the material at hand. This causes the growth-arrest of the twig and the stunting of the leaves involved, which latter shrink up to small, scale-like affairs that overlap each other. The grub lives within this snug habitation, occupying it all winter. In the spring it emerges as a minute two-winged fly, a very beautiful little creature when seen through the aid of a high-power microscope. Other insects of small size resort to this gall of the willow to live in it; but they do not seem to interfere with its rightful occupant.

There is a gall which I noticed only on garden and



DESTRUCTIVE GALL FOUND ON OAK LEAVES

Fig. 9—This is possibly the gall known as *Callirhytis capulus*, and is here shown natural size. The specimen was collected by the author in the District of Columbia, within the city limits of Washington; it is not of frequent occurrence. The insert cut is of a drawing made by the author of an "oak apple" that shows the internal radiating fibrous structure. Compare this with Figure 10 on the next page.

wild rose bushes; it appears to be a compound affair—that is, the larvæ occupying it are living in community-style. These galls possess a mossy appearance externally, and are known to the student of them as mossy rose-galls. Some curious ones are also found on hazel bushes and they are well worth attention and study.

During the summer of 1922, while collecting flowers and insects in the woods and fields in the District of Columbia, I ran into many specimens of galls on dif-



ferent trees and plants of which I collected a number and later photographed; several of these are reproduced here as illustrations. One would be surprised to see how many kinds of galls can be discovered and collected in a few hours in such a locality as I have just mentioned. They will be found on various species of trees, especially on the oaks, maples, willows, conifers, and others; while wild roses, blackberry bushes, goldenrod, and other plants will furnish a large number of others. All such specimens I have taken to my home and studied very carefully; and, through the aid of my microscope and many books on the subject, I have learned a good deal about them.

Goldenrod is an especially interesting plant to examine for such purposes, and it has long been known that the plant is subject to the attacks of several species of parasitic insects. One form appears to devote itself to that part of its victim from which the flower stalks spring

and the leaves culminate. As a result nearly all of the former drop off, while a most remarkable proliferation of the leaves at the superior end of the "rod" follows—and we have the condition here shown in Figure 4. Another species attacks the stem of this plant, causing an elongate, ellipsoidal swelling to appear, of which authors have presented illustrations in their works. Lutz, in his

"Field Book," on page 472, gives us quite a list of the insect galls found on various parts of the goldenrod, illustrating three of them by pen-sketches on Plate CI.; he makes the statement that "about 150 kinds of galls have been recorded from American Compositae."

Doctor Holland, in his well-known "Moth Book,"

presents us with many valuable and interesting accounts of such moths as attack goldenrod and illustrates them with instructive cuts of the insects and their larvæ, together with specimens of their ravages. Special reference is made to the so-called "Misnamed Moth" (p. 418) the *Solidago* Gall-moth, and others (p. 425).

I have frequently collected the remarkable galls we so often find on the low and high vine blackberries; and figures of them from specimens in my own collection, are shown here on Plate 5. In the case of the low-vine blackberry we often find a roundish gall on the stem as it emerges above ground.



THIS CURIOUS OAK GALL IS ONE OF GREAT BEAUTY

Fig. 10—So conspicuous is this form in oak woods that it attracts the attention of every passer-by. It is woolly, pure white, and speckled with small pink dots.

This is at first of a dusky green, but subsequently is shaded with a dull red. In the center it is filled with a pith-like substance containing many little rounded cells. On the high-vine blackberry there is often found a very conspicuous gall that has the form of an irregular, nodular mass like wood—tough and hard. At first this is of a deep green color; but as time goes on it gradually

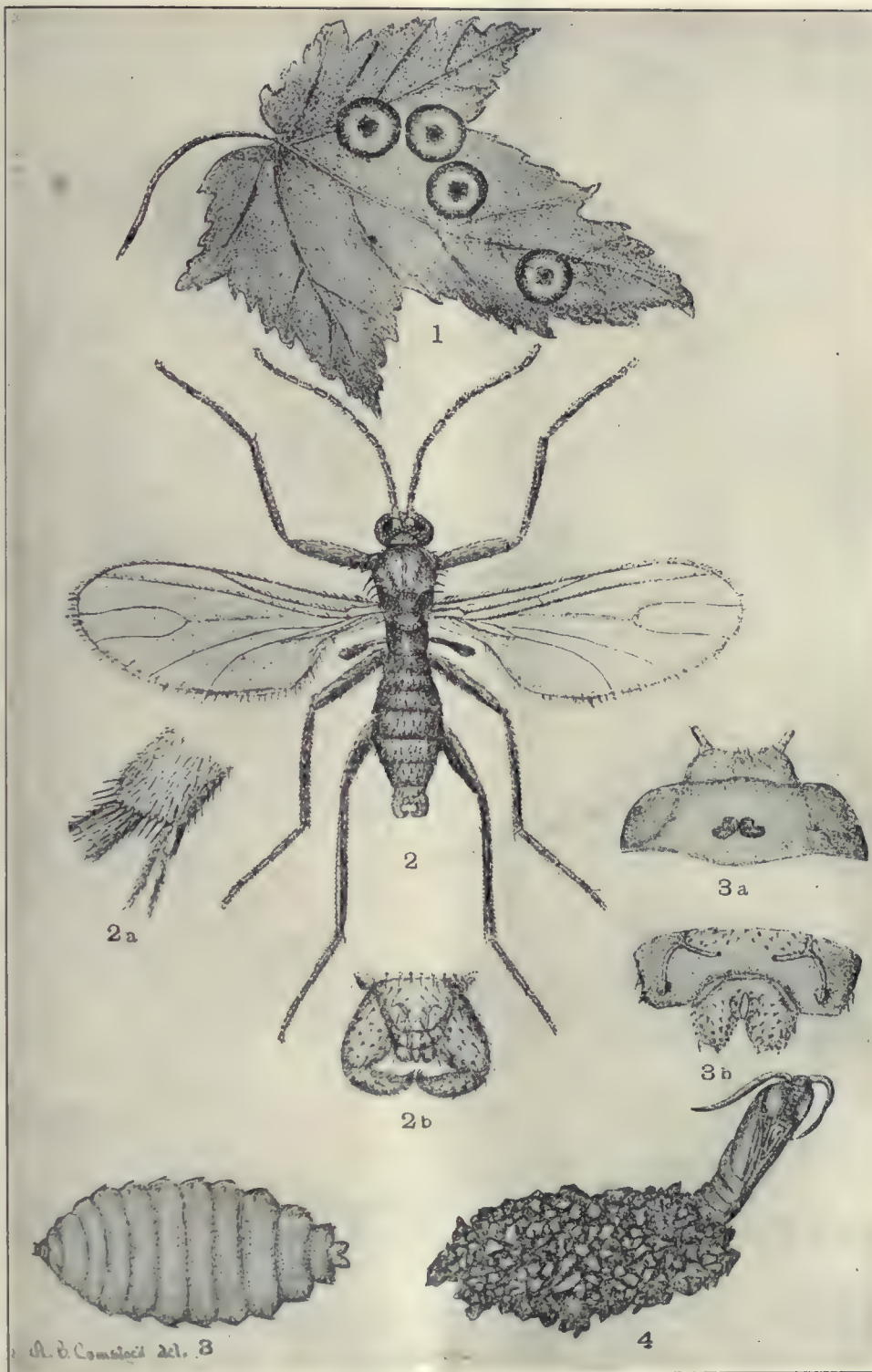


changes to a warm mahogany red, and is not altogether an unpleasing object. (Fig. 5). I have found that the stems of the plant invariably die distad to these masses, but they may live and bear flowers and fruit below them; this is well shown in the big middle one in the plate. On cross section—either way and at any point—one of these masses is found to be quite solid, with perforations here and there that lodge the larvæ of the parasitic insect responsible for the formation of the gall. Not infrequently one of these masses is composed of some five or six longitudinal parts, roughly subcylindrical in form with rounded more or less pointed, extremities. They are closely packed together and surround the stem, as illustrated in not a few works on the subject. Still others of these galls are rounded and nodular, as shown in Figure 5.

Next we come to the beautiful little galls so frequently seen on the upper side of the leaves in the red maple (*Acer rubrum*). No end of people see these every day as they

pass through the maple woods during the spring and summer months, yet not one person in an hundred can say how they came there. They are well shown in my

reproduced photograph of them in Figure 6, where two leaves of a red maple present the infection. Each of these ocellated spots has a diameter of something like three-eighths of an inch and is brilliantly colored, the center and outer ring being of a bright red, with the included ring a deep, rich yellow. Sometimes nearly every leaf on a red maple may be thus affected and the tree be terribly damaged by the condition while in some instances only a few of the leaves present these galls and the tree does not suffer in any way. In the red maple woods about Washington one frequently finds examples of this condition of the leaves, now known to be caused by a minute insect. Sometimes the spots are of but one color, that is, of a



#### INSECT THAT MAKES THE OCELLATED RINGS ON MAPLE LEAVES

Fig. 11—Copied by the author from a plate in one of Packard's Reports. The original drawing by Mrs. A. B. Comstock, of Cornell University. (Much enlarged). *Sciara ocellaris*. 1. Leaf of maple (*Acer rubrum*) with galls; 2. adult, male; 2a., tibial spurs and brushes of same; 2b., claspers of same; 3, larvae; 3a, head of larva; 3b, caudal end of larva; 4, cocoon and pupa skin.

pale green, or, in others, a light yellow. As many as fifty may occur on any single leaf, in some cases being



so abundant as to overlap each other and cover the leaf all over.

In 1881 Professor Comstock very fully described the insect that caused these spots, his account appearing in the U. S. Entomologist for that year. Mrs. Comstock drew the plate for him and this is herewith reproduced in Figure 7. "At the center of each leaf," says Professor Comstock, "may be seen, on the other side of the leaf, an elevated portion. Corresponding to this, on the lower surface of the leaf, there is a pit, within which the larva lives. Larvæ that were partially grown were found to be held in place in the pit in the leaf by what appeared to be a larval skin. This pellicle covers the body entirely, and is with difficulty removed from it; the edges of the pellicle adhere quite tightly to the leaf. Where the larva

larva, and other important points, all of which is too extensive for quoting in this place, while many of the points described are pretty well illustrated in the plate.

Of all the trees that are attacked by parasitic insects giving rise to galls of one kind or another, probably the greatest sufferers are the various species of our oaks. No part of the tree, be the species what it may, seems to be immune from such conditions—even the leaves developing galls of more kinds than one. We find them not only on the leaves, however; they also occur on the limbs, branches, twigs and fruit. The nature of some of these excrescences are well shown in the figures illustrating the present article (Figs. 8, 9 and others). More than three hundred different galls have been described as occurring on the oaks, and many of these have been illustrated. Very familiar to many are the beautiful green spheres we so often see attached to the leaves. Up to a certain time, one of these will be of the same fine shade of green as the leaf to which it is attached; subsequently it becomes a pale tan color at its distal pole, and this color, in a uniform way, gradually spreads toward the stem, until the entire outer skin of the gall is of the same shade. A gall of this kind is of extremely light weight, and when thrown into water it will float like a cork. Cutting one of them open, passing the incision through its center, the plane of it making any angle with its polar diameter, exposes its internal structure. In some species of oaks the entire interior is found to be occupied by a soft, spongy material, fine in texture, and of scarcely any weight. In the center of this there is a small cavity for the larva, the tissue surrounding it being much darker than the rest. Now, cutting open other galls of this kind from still other species of oaks, we find, instead of this spongy material, a great number of very fine radiating threads, the center from which they spring being the cavity containing the larva. Only a certain proportion of these threads are sufficiently long to reach the inner surface of the gall. Without giving their scientific names, it should be known that these two galls, although having externally the same appearance, have really very different fillings, as just pointed out, and they are produced by insects of quite different species.

Another curious oak gall is scientifically known as *Biorhiza forticornis*, here shown in Figure 7. It looks very much like a wad of raisins squeezed around a twig. Usually it is of a tan color, rather light, while Lutz describes it as being "pale yellow with reddish tinge when fresh. Kernel of each division held by radiating fibers."

In Figure 9 we see still another most destructive gall, found on the leaves of an oak. These have the appearance of green marbles, and are as hard as stones. They completely consume the leaves upon which they are attached—or the larvæ do after they appear. This gall is probably the *Callirhytis palustris* of Lutz, judging from his drawing of a specimen that closely resembles the one here shown in Figure 9.

By far one of the most striking as well as beautiful



GALLS ON OAK TREES AND BLACKBERRY BUSHES

Fig. 12—Shows vertical, median sections of a spongy oak gall (upper) and the blackberry gall (lower). The latter is the specimen shown in Figure 5 above. It is nearly solid in structure, and riddled with cavities for larvæ. Both figures natural size.

is full grown, it forces itself from under this skin, which then falls back into the cavity or is pushed to one side, where frequently it may be seen adhering to the leaf. The larva at this time drops to the ground, into which it enters to undergo its transformation." Following this description occurs a very full account of the insect, its



oak galls is the *C. seminator* shown in Figure 10; it looks like a little ball of white wool, dotted all over, rather sparingly, with small pink dots. As contrasted with the green leaves, it has the appearance of some fruit or other, and it is sure to attract the attention of the passer-by in the oak woods where it occurs. Often three or four of them are to be seen on some sapling oak only a few feet above the ground.

From what I have endeavored to bring out in the present article, it will be seen that the study of galls is not only a very interesting one but one of decided importance. Most of them can be easily preserved in one way or another in the herbarium, or for exhibition in the public school museum. School children should be encouraged to collect all the different kinds of gall they come across in the woods and fields; to make good photographs of them, and to properly prepare all the insects, moths and larvæ responsible for their appearance. In a very few years such a collection comes to be of value—especially if scientifically and tastefully arranged with all the data relating to it.

*'Tis always morning somewhere, and above  
The awakening continents, from shore to shore,  
Somewhere the birds are singing evermore.*  
—Longfellow.

## Famous Trees at Georgetown Convent

EVERY fair graduate of the Georgetown Convent knows these trees, nominated for the Hall of Fame for trees with a history by Mary A. Easby-Smith, historian of the convent alumnae. Mrs. Smith informs the American Forestry Association that this aged Jefferson pecan on the Convent grounds grew from a nut given by President Jefferson, more than a century ago, to Mr. Threlkeld, who formerly owned a part of the Convent grounds. In a letter to Mr. Threlkeld, dated March 26, 1807, Jefferson says:

"Presuming you are devoted to the culture of trees, I take the liberty of sending you some pecan nuts which, being of the last year's growth, received from New Orleans, will probably grow."

The tree is now 65 feet high and measures seven feet in circumference. Two copper beeches which Mrs. Smith also nominates for the Hall of Fame are a landmark in that part of the city. They may be seen from the front lawn of Georgetown College, and from there have the appearance of one big tree with a crown like an immense copper dome.

It is impossible to guess the age of these venerable trees, which have stood as silent guardians of the playgrounds of several generations of Georgetown's fair alumnae. They were in the prime of their strength and beauty during the Civil War, as several of us can attest. says Mrs. Smith, but during the past fifty years they

have suffered from violent storms and the effects of extreme old age. Had it not been for the good work of the tree surgeon they would probably have been destroyed before now. The gnarled trunks are full of old



THE JEFFERSON PECAN IN THE CONVENT GROUNDS

initials and dates, the only one of which we can now decipher is "44." The circumference of the beeches (five feet from the ground) are 13 feet and 11 feet, respectively. One cannot give a real diameter, as they are by no means round. The height is very close to 90 feet, and the combined crown of both is sixty feet. (See page 450.)

## THE WOODS

How good it is to ramble where the winds and water roll

And the harbingers of Nature with their gladness fill the soul.

THE woods at first convey the impression of profound repose, and yet, if you watch their ways with open ear, you find the life which is in them is restless and nervous as that of a woman; the little twigs are crossing and twining and separating like slender fingers that cannot be still, the stray leaf is to be flattened into its place like a truant curl; the limbs sway and twist, impatient of their constrained attitude; and the rounded masses of foliage swell upward and subside from time to time with soft long sighs, and, it may be, the falling of a few raindrops which had lain hidden among the deeper shadows.—*Oliver Wendell Holmes.*



# BOYS' REFORESTATION CLUBS

By V. H. Sonderegger

Superintendent of Forestry, Louisiana Department of Conservation

WHEN the Conservation Department of Louisiana began the establishment of Boys' Reforestation Clubs in the fall of 1921, it started a work that promises to do more for forestry in Louisiana than any of the other agencies it has inaugurated to that end.

The idea of these clubs originated with Col. W. H. Sullivan, of the Great Southern Company, and was the outgrowth of the success of the boys' corn and hog clubs, which have been operated with eminent success in Louisiana for several years. To make a success of the work the Great Southern Lumber Company donated \$500 to be

general interest in the subject, for in reaching the boy the department has also reached his parents and other male relatives and friends, and the neighborhood has received an object lesson in forestry, the effect of which must be far-reaching.

The enrollment of 664 boys in the latter half of the first year of the work was extremely gratifying to Commissioner Alexander and his agents have assured him that during the present year much larger classes will be organized. It was not until August, 1921, that H. J. Stahl was selected by V. H. Sonderegger, superintendent of the forestry division of the department, to take supervisory charge of the clubs, and he at once got in touch with the forest rangers and began the work of enrollment of the boys. The clubs being organized, the forest rangers assisted them in securing plots of ground and the lesson that was stressed in the instruction was fire prevention and fire control. To impress the importance of this factor in the protection of timber in the minds of the boys, they were told that in the distribution of prizes 50 per cent of the points in judging would be allowed for excellence



THE PLOT OF MILLARD PARKS, WINNER OF THE SWEEPSTAKE PRIZE OF EIGHTY DOLLARS FOR THE BEST PLOT IN THE STATE, ALL CLASSES—AT FOURTEEN YEARS OF AGE.

given in prizes, and this sum was placed at the disposal of Commissioner Alexander, of the Conservation Department of Louisiana, who was given complete charge of the work. Mr. Alexander placed the matter in the hands of the forestry division of the department, and the work of forming the clubs was at once begun.

Though the movement was started late in the fall, classes aggregating 664 boys were formed before the close of the year, and in the closing months of 1921 all of these boys received practical lessons in forestry. Each of the boys secured a plot of land between one and three acres, some of the plots being barren, while others bore a second growth. The clubs were organized on much the same lines as the boys' corn and hog clubs had been, and the work has been as successful thus far as the clubs organized along agricultural lines have been. Not only have the boys received practical instruction in forestry, but the clubs have proved an effective way of arousing



PLOT OF ROBERT MAGEE, AGED THIRTEEN YEARS. WINNER OF THE FIRST PRIZE OF THIRTY-FIVE DOLLARS, 6 TO 10 YEARS OLD, LOBLOLLY IN AN OLD FIELD.

in this work. The lads were taught to construct fire lines around their plots as the first lesson in their work, and they were next instructed in the proper thinning out and cleaning of their plots. Some of the boys were quite successful in this work, and the judges who examined each of the plots at the beginning of this year preliminary to the distribution of prizes, declared that some of the plots they examined resembled United States For-



est Reserve plots. Each of the boys kept a complete record of the work he performed on his plot during the period of the session. Most of the boys had charge of from one to three acres of second growth pine or second growth hardwood. Others took plots that were partially seeded or barren and either transplanted seedlings in their areas or planted the seed, thus performing real reforestation. It is the intention of the representatives of the Conservation Department to give more attention in the classes of the present year to this feature of forestry instruction, it being considered more important to make lands lying idle productive than to work on second growth areas.

It may be stated at this point that the Great Southern Lumber Company has again donated to this work, through the Conservation Department, another \$500 to be divided in prizes for the classes of 1922. The work of the larger classes this year will be the outgrowth of experience gained in the first year, for it is to be understood that the department in inaugurating the work in Louisiana had no precedent to govern its activities. These were the first clubs of the kind ever organized, and the work was necessarily along original lines, so far as the instruction of the youth was concerned. As stated, the plots of the boys the past year ranged from one to three

the leaders in forestry work in the United States, and, as said, the establishment of these clubs is the first educational work of the sort in the country. The establishment of the clubs has enabled the Conservation Department to go before the public schools of the state, and to give the faculties and student bodies of these schools an idea of what the department is endeavoring to accomplish in forestry work in Louisiana. Moreover, there is scarcely a public school in the rural districts of the state that is not within reaching distance of one of the plots of the boys' clubs, and school children generally can be expected to take an active interest in the work of their fellows. The first season of this new form of education



PLOT OF JOHN GRAVES—WINNER OF THE SECOND PRIZE OF TEN DOLLARS FOR 21 TO 25 YEAR OLD PINE. THIS IS SECOND GROWTH LONGLEAF PINE ON AN OLD FIELD.

acres. The department plans for the present year contemplate placing equal areas under the direction of boys who seed or transplant areas, while the boys who take charge of second growth plots will have larger areas. This will give the Conservation Department in its work of advancing the cause of forestry around 1000 forestry demonstration plots in the state, and between 2000 and 3000 acres under tree cultivation.

Louisiana has for some years been regarded as one of



THE PLOT OF KARL SCHEXNAYDER, A BOY OF FIFTEEN YEARS, AND WINNER OF PINE SEEDLING CLASS, A THIRTY-FIVE DOLLAR PRIZE.

has proven so successful it can be accepted as an assured fact that forestry is on a permanent basis in Louisiana.

The judging of the work of the boys was done by V. H. Sonderegger, superintendent of the forestry division of the Department of Conservation, and H. J. Stahl, who supervised the instruction of the boys. The classes were under the immediate direction of the forest rangers in the several districts of the State. The sweepstake prize of \$80 was won by Millard Parks, a youth of 14 years, of Washington parish. There were a number of other prizes in different divisions of the work, and to encourage the work, parishes in a few instances appropriated money for prizes for the clubs within their boundaries.

By those concerned with the work of conservation the disposition to be made of the 125,000,000 acres of cut-over forest land in the Southern States is considered one of the most serious problems confronting the people. Some of this land can be brought under cultivation, another part can be used for grazing and stock raising, but there will remain a large percentage that can only be



utilized by reforestation. There is a considerable acreage of land in the coastal plain which in the judgment of the United States Department of Agriculture is absolutely unfitted for agricultural purposes, and this land must be reforested or remain a burden on the hands of the owners or of the State, should it revert to the sovereign through seizure for taxes. In the meantime there is a growing demand for lumber and an alarming falling off in the potential supply. Forests have been razed by lumbermen and others without regard to replacement, in many instances not a seed tree being left standing to start new growth. It has been said that the transient lumberman of the flush days now drawing to a close was like the carpet-bagger of an earlier period, out for what he could take away, and took no heed to the welfare of the community in which he operated. There are indications that this carpetbag policy has undergone a change. When Henry Hardtner, of Urania, some years ago figured that the vast tract of standing timber of his company would only feed the sawmill for twenty-five years longer, he set himself to the solution of the problem of making the business a permanent one. He reached the conclusion that by intelligent cultivation he could replace his forests as fast as the sawmill could consume them. Col. W. H. Sullivan, of the Great Southern Lumber Company, of Bogalusa, after a study of the Hardtner project determined to follow his intelligent lead. Hence the town of Bogalusa, built up by the business of the Great Southern Company's mill, which in a few years reached a population of 10,000, and is still rapidly growing, has been constructed as a permanent settlement, not a temporary sawmill town, such as have sprung up and disappeared in the South in the past thirty years.

Soon after the activities of the northern lumbermen began, 300,000 acres of Louisiana forests were being denuded each year, the lumbermen mutilating trees they could not use and leaving no seed trees standing to secure regrowth. As the more valuable timber became exhausted the lumbermen installed plants to utilize as by-products that which should have been permitted to grow and re-establish the forest. Henry Hardtner demonstrated in his experiment at Urania that if a tree or two were left on each acre the land would be reforested by nature, the only needed aid being the prevention of fires, and, in the case of long-leaf pine, the keeping of the razor-back hog away from the seedlings. The bark of the root of these seedlings is sweet and the hog is very fond of it, and roots up every seedling within his reach. On the other hand the root of loblolly and short leaf pine has a bitter taste and hog leave it alone. Hence new growth on cut-over lands has generally been confined to less valuable timber.

Contemporary with the destruction of the forests there has grown up in Louisiana a lumber business the investment in which, as shown by the assessments rolls, is \$200,000,000, employing approximately 57 per cent of the State's industrial labor. Within a few years this great business will be entirely wiped out, unless reforestation goes hand in hand with destruction. Louisiana

has not been entirely remiss in the protection of her forests. As early as 1904 an act was passed to provide for the protection of the forests of the State, the suppression and prevention of forest fires, and to provide for the reforestation of denuded lands, and for proper instruction in forestry in the public schools, etc. This was an excellent beginning, but unfortunately there were no funds available to carry on the work. In 1920, through the efforts of M. L. Alexander, Commissioner of the Conservation Department, the Legislature passed another law providing funds sufficient to enable the forestry division of the department to employ men in the field, and placing a severance tax on lumber to provide funds for the prosecution of the work. Previous to the passage of this act, Mr. Alexander, by virtue of the broad scope of the law establishing the department, had set aside funds received from hunting licenses, oyster leases, etc., to start the work. The act of 1920, however, made the division self-supporting and has enabled it to place thirty forest rangers in the field to protect standing timber against forest fires. These rangers also spread the gospel of conservation among the people and warn of the danger of recklessly building fires in the woods and grass lands. They warn the people that when the forests go they must pay a higher tax rate to support the government and provide for public improvements. Railroads lines are regularly inspected by the rangers to see that the right of way is kept free of inflammable material, and sawmills are similarly inspected to diminish fire hazards. The people are instructed to aid in the protection of the forests. Owing to the nature of the climate and the quality of the soil, the State Forester believes, if fires can be prevented, the forests will reproduce themselves whenever seed trees have been left standing. In absolutely bare areas replanting will be necessary.

Fires are universally recognized as the great danger and the worst foe of forest conservation. Prevent them, and the standing trees will soon reseed the cut-over area. A healthy pine tree will produce large quantities of seed, each seed germ being provided with a sail, and an ordinary wind will carry the seed a considerable distance, covering the ground around the tree with an average of 250,000 to 300,000 seeds to the acre. In a few months these seed sprout and little trees about an inch high appear. These seedlings will replenish the forest if protected, but they cannot stand fire. Recognizing these facts the Legislature has penalized the starting of fires, either through carelessness or intent, that endanger forest growth, and has required lumbermen to leave uncut and "unbled" for turpentine at least one healthy young tree per acre to reseed the land. It has also passed laws encouraging reforestation, limiting the taxing of lands whose owners enter into contract with the State to set aside the cut-over land for a term of years for the growth of trees.

A few large tracts of cut-over forest have already been so set aside, and other owners are desirous of entering into the contract. That the business of reforestation can be made profitable has been demonstrated. If eight



trees are left on each acre for reforestation and the land is assessed at \$2 an acre, the stumpage value of the seed trees at the end of a 15 year period, at \$5 per thousand feet, will return 5 per cent compound interest on the \$2 investment, and will pay back an annual expense of ten cents an acre with compound interest on each year's cost. Meantime the land has been brought to a vigorous young stand, leaving a period of twenty years before maturity.

In these twenty years there should be a regular revenue through the collection of firewood in thinning out the growth, dependent on the thickness of the growth of the young trees. There are instances where loblolly has cut 10,000 feet per acre after a growth of twenty years. If the present price of lumber is maintained (and the indications are that it will be increased), this would give a return of about \$100 an acre in stumpage.

## THE GEORGIA FORESTRY ASSOCIATION

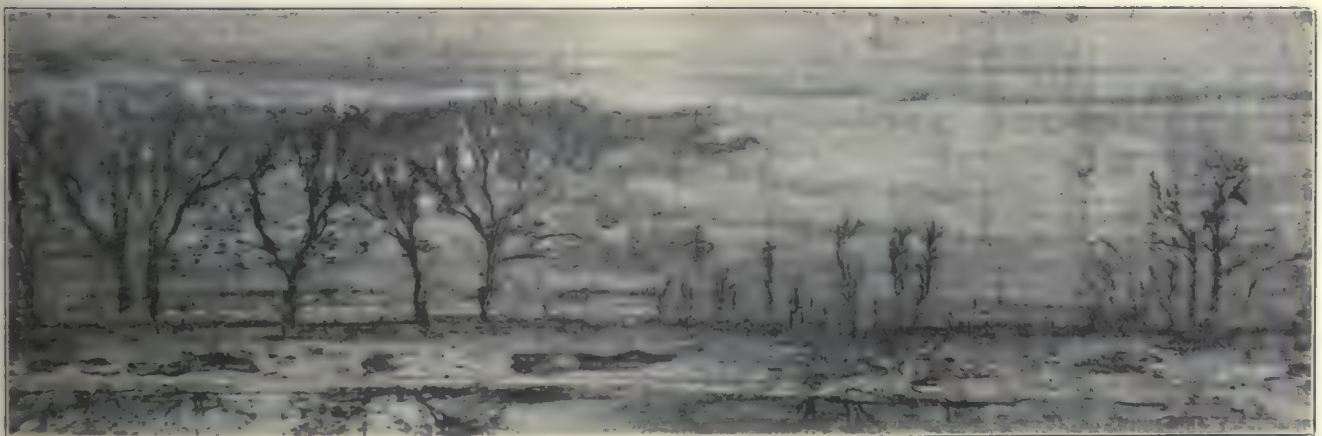
(Continued from Page 476)

ever, failed to provide appropriations for the work and while the committee was therefore not able to make as exhaustive an investigation as the situation justifies, it has submitted a report recommending specifically the establishment of a permanent state forestry department.

The Georgia Forestry Association is actively supporting the recommendation of the board and has organized the state in a very effective way. The officers of the new association are Bonnell H. Stone, president; A. B. Wood, of Brunswick, first vice-president; Mrs. W. W. Stark, of Commerce, second vice-president; Senator E. E. Snow, of Quitman, third vice-president; W. B. Lemon, of Atlanta, secretary, and C. B. Harman, of Atlanta, treasurer. An executive committee was immediately appointed by President Stone as follows: H. G. Spahr, of the Georgia State Highway Commission; C. B. Harman, secretary of the Southern Sash, Door and Millwork Association; C. S. Ucker, of the Southern Seaboard Airline Railway; Miss Alice Baxter, chairman of the Committee on Natu-

ral Resources of the State Federation of Woman's Clubs; W. B. Lemon, of the Western Electric Company, and Senator Robert C. Ellis, of Tifton.

An advisory board was later appointed and comprises the following: H. C. Fowler, Mrs. Orville A. Park and R. C. Berckmans, of Macon; G. C. Smith, Brunswick; Prof. T. D. Burleigh, of Athens; W. B. Hunter, of Cornelia; Miss Lois P. Bowdle, of Athens; W. H. Beckman, of Albany; Homer Williams, of Albany; W. L. Roebuck, of Cordele; Miss Etta Colcough, of Augusta; Mrs. Max E. Land, of Cordele; Mrs. Albert E. Horton, of Atlanta; Mrs. Lollie Belle Wylie, of Atlanta; William A. Candler, of Atlanta; Alex Sessions, Waycross; Senator E. M. Tharpe, of Townsend; John Riis, of Milledgeville; Max Jasspon, of Savannah; James W. Morton, of Athens; Mrs. C. R. Orr, of Athens; Mrs. Ira C. Farmer, of Thomson; Mrs. J. E. Hays, of Montezuma; Morton Turner, of Quitman; Mrs. M. E. Judd, of Dalton, and Major John Cohen, of Atlanta.



NATURE PAINTED THIS SCENE ON A CYPRESS BOARD

In the lumber yard of the National Lumber Company, in St. Louis an interesting piece of Nature's etching was recently found. The board which has the woodland scene on its surface was found in a pile of lumber while orders were being filled and had been at various heights in the pile for at least two years. The board has every appearance of an etching and shows a typical cut-over forest scene so characteristic of many parts of southern Missouri and northern Arkansas. The natural color of the wood with a slight discoloration gives a hint of twilight hours to add to the effectiveness of the scene.—  
(Allan P. Child)

(Note:—This Board was found in the yard of the National Lumber Company, Jefferson and Lucas avenues, St. Louis, Missouri.)



## A Word for the Pitch Pine

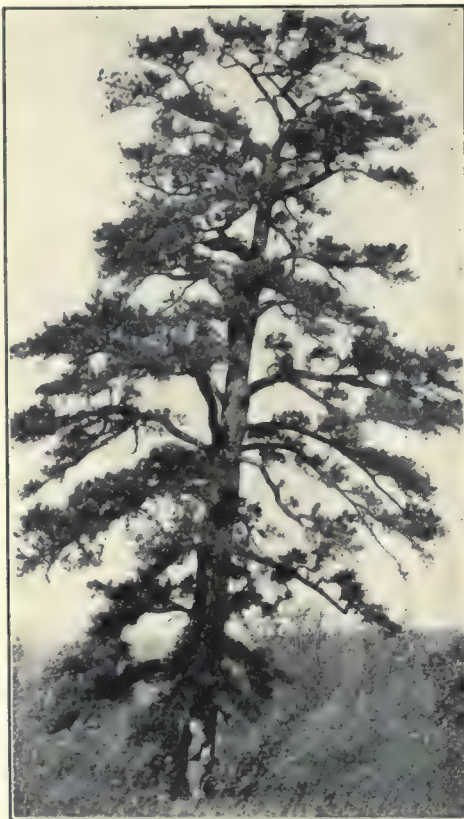
By J. M. G. Emory

LET us presume that we are on an express train, west-bound from Jersey City and are swiftly flying through the rolling fields of New Jersey. Scattered wood-lots and occasional timbered swamps are rapidly being replaced by a more general forest cover as the train rushes westward. Tall tulip trees, magnificent oaks and other hardwoods crowd to the very track, while deeper in the forest glades dark hemlocks and blue-green pines give the woodland scene a more sombre hue. But as the train twists out into a cleared farming settlement, a new tree, of very picturesque development and of a warm green foliage, stands sentinel-like alone in a rocky pasture. It is a pitch pine, most generally disliked of our eastern evergreens, and yet when allowed to grow unmolested by fire and the human hand, develops into an exceedingly picturesque and interesting tree.

Many very beautiful photographs have been made using this pine in the composition, often in silhouette against a setting sun.

The pitch pine for real beauty and value can not compare, of course, with our eastern white pine or the red pine, yet there is no other tree which will exist in quite the barren soils and exposed sites that this tree will, and still be of value commercially and esthetically, for the wood of the pitch pine, although coarse and extremely resinous, is very useful. It is very durable in the soil and consequently valuable for posts and poles, and sawed into rough lumber, makes flooring of a very durable nature. The pitch pine also yields crude turpentine of very fair quality, and before the great pineries of the South were exploited, this pine supplied the turpentine, pitch and tar of the country. In the olden days pitch pine was used to some extent as fuel, and torches were made from the resinous knots.

The pitch pine occurs on the most sandy and sterile



A HANDSOME OLD PITCH PINE IN NEW JERSEY

of soils where few other trees can exist, it is of great economic importance. It fixes the sands and prevents them from shifting and over-running more valuable farming land. Moreover, as the years go on, great quantities of needles and debris accumulate on the forest floor, forming a rich humus which makes the production of more valuable trees possible. For these reasons, it seems that the pitch pine fills a position in the production of forest resources which very few other trees could, and therefore is deserving of more careful protection than it has previously been afforded. It should be looked upon as a useful member of the forest family and not a mere, troublesome weed to be eradicated as quickly as possible.

## Trees to Take the Place of Those Destroyed by Blight

By C. H. Thomas

CHESTNUT replacements, the trees which will fill the gaps in Pennsylvania forests caused by the ravages of the chestnut blight, will not be so hard to find as was first anticipated, says Professor Illick, of the State Forestry Department, at Harrisburg, Pennsylvania. Many of the denuded forest areas which were laid bare when the blight finished its deadly work are once more growing new timber producing species.

Not only have students of forestry been encouraged by the number of species which can be substituted for the once numerous chestnut trees in Pennsylvania, but they have a ray of hope that eventually the chestnut trees may be brought back. This hope is based upon the belief held by some foresters that the blight will generate its own antitoxin and that the ultimate result will be chestnut trees with greater power of resistance than those which fell victims to the blight. Until this hope is realized foresters are studying the various substitutes for chestnut trees.

Of the several species found suitable to the soil and climate of Pennsylvania the rock oak or commonly known chestnut oak, because of its close resemblance to the chestnut tree, is destined to play a big part in the reforestation of the areas denuded by the blight. It is now being grown to some extent in Pennsylvania. As a common species of the chestnut, the rock oak has been discovered to grow much more rapidly than was at first supposed. Foresters formerly reckoned its apparent growth upon the rings on the trunk and the growth demarcations on the twigs. Formerly it was supposed that each ring and each demarcation marked a years growth, but Professor Illick discovered, upon close observation of specimens under cultivation on State Forest lands that two or even three growth periods occur frequently in a single growing season. The chestnut oak was found to reach a height of 17.8 feet in a period of 17 years. It showed amazing development in experiments conducted on the State plantation at Mont Alto, although it was in competition with the rapidly growing chestnut tree. The fact developed some years ago that its growth was retarded by the close proximity of the chestnut, was confirmed when the chestnuts were killed by the blight, the rock oak showing an



acceleration in growth afterward. The chestnut oak will replace the blight killed chestnut to a greater degree than any other single species in Pennsylvania for in most places it is the principal companion of the chestnut. Along the base of the mountain slopes in southern Pennsylvania chestnut oak frequently comprises 20 per cent of the stands, while along the middle slope it comprises from 30 to 40 per cent, and toward the top of the slopes and upon the ridges it frequently comprises 60 per cent.

Pitch pine, another close associate of the chestnut, is expected to play a big part in reforesting dry, gravelly and sandy mountain slopes, upon which some of the most exacting trees do not thrive. Like the chestnut oak, the pitch pine grows more rapidly than the apparent growth indicates. The pitch pine has a wide range and is

the most fire resistant forest tree native in Pennsylvania.

Black locust, another associate of the chestnut, is more local than either the chestnut oak and the pitch pine, but is becoming more numerous in the State. Light sandy soil favors the growth of the black locust and it is one of the most thriving species among the mountains of Bedford County. Black oak, pignut hickory, black birch, table mountain pine and Jersey or scrub pine also are helping to fill the gaps left by the chestnut blight. Where the soil is moist, the chestnut replacements will be more complete and satisfactory, nature aiding largely in the work. Companion species of the chestnut found in such soil are more desirable, among them being the tulip, white ash, red and white oak, red maple and white pine.

## WOODLANDS

By Ferdinand W. Haasis

In the southwestern United States on the edge of the desert are to be found certain areas of scattered trees of low stature—cedars, pinyons, Junipers, oaks, etc. These stands are known as "woodlands".

Because of the small size of the trees and the comparatively small number per acre, with the resulting low yields, there has always been some difference of opinion as to whether or not they ought properly to be included within the National Forests. Recently this debate has been actively revived, two articles on the subject having appeared in the "Journal of Forestry" for May, 1921. The following is submitted as a contribution to the dis-

cussion by one to whom it is most familiar.

Bear in mind that these areas have at present considerable value for grazing and as a source of fence posts and fuel, to say nothing of pinyon nuts, and that without administration there is as much danger of destructive exploitation of these resources as there is of the more impressive saw timber stands. Furthermore, many of them are so situated as to have a significance in watershed protection; and no one can predict what enhanced value they may have in the future as sources of wood fibre, etc.

The nomenclature refers to the geologic features of Arizona and New Mexico.

### WOODLANDS

"They're not proper forests",  
"Dear at any price",  
"Ruthlessly eliminate"—  
That's the sage advice.

Harken to my story,  
Sons of Mother Earth,  
Narrow not your vision,  
Learn the Woodlands' worth.

Once in the old Carboniferous basins,  
Fringed by the tall Sigillaria trees,  
Toiling and dying, the myriad corals  
Laid down their limestones in warm shallow seas.

The wash rushing down from the neighboring highlands  
Buried them deep under mud, silt, and sand,  
Then an upheaval and unclouded sunshine  
Gave us a new, barren, desolate land.

Up on the Wingate and Shinarump sandstones,  
Up on the Zuni and Moencopie shales,  
Creeping, possessing, the great stately pine trees  
Offered defiance to lightning and gales.

Then in the course of the following ages,  
Bared by the tumult of torrents of rain,  
Slowly once more came those old pristine limestones  
Up to the surface, a wide-spreading plain.

Cherish, then, the woodlands;  
Bring them to the fold,  
Tree and bush and grass clump;  
Though the critics scold;

The stately, exclusive, particular pine trees  
Looked at the orange white barren expanse,  
Slowly and daintily tried to invade it;  
But failing, rains checked their attempted advance.

Now to the foreground came pinyons and cedars.  
Took up the work that had vanquished the pines,  
Covered with verdure the Kaibab formations,  
Soft'ning their glare and their angular lines,

Sending their armies far out on the desert,  
Wresting the land from the cactus and sage,  
Growing the wood for the fuel and house beams  
Used by the folks of that far-distant age.

Pinyon and cedar still border our pine lands,  
Flanking the forests of sawtimber trees;  
Fence posts and cordwood and pencil stock billets  
Make up a sixth of our wood sales with ease.

Stretching out the bound'ries;  
Keeping clear our goal:  
*National resources*  
*For the Nation as a whole!*



# Tree Stories For Children

## Why the Almond-Tree Blossomed

By Mary Isabel Curtis

**Y**OU like to crack and eat nuts, don't you? Yes, of course you do; and if you and I agree, then you think the almond kernel is the sweetest nut of all. But when you're crunching the firm, white nut-meats do you ever think about the tree from which the almonds come?

If you live in the northern states you very seldom see an almond tree. These trees are timid things and dreadfully afraid of cold, dark winters. They prefer a smiling, sunny country like Italy or California; and there, on every hand, you can see almond trees which flower out in springtime into wonderful pink blossoms, and in the autumn throw down these best of nuts for your enjoyment.

At one time, though, so long ago that no one can remember just when that time was, the almond was quite an ordinary tree. It had no blossoms and no fruit, but just a few green leaves that dropped off in the fall and left it bare. At that time there lived in Greece two children who were the dearest friends and playmates that you can imagine. Phyllis was a slender, dark-eyed little maiden, but though she was a girl, she was as fleet of foot and agile as was young Demophoon, and could play all the games that he liked best. He thought there never had been anyone so nice as Phyllis, and she adored Demophoon. They had such merry times together that they never longed for any other play-fellows, but were as happy as the day was long.

Once, however, Demophoon had to go away for a short time, to see an aunt or cousin who lived a day's journey distant; and while he was gone some most unkind and mischief-making person went to Phyllis and told her that Demophoon was never coming back. Now though poor Phyllis had been lonely without the comrade whom she dearly loved; she had comforted herself by thinking of the happy times in store for her when he came home again. But when she heard this sad news she was overcome with sorrow and dismay. The more she thought about it, the more she felt that she could never live without Demophoon. At last, in an excess of grief, she tried to kill herself, but the gods, in pity, would not let her really die. They changed her into an almond-tree beside the brook where she had often played.

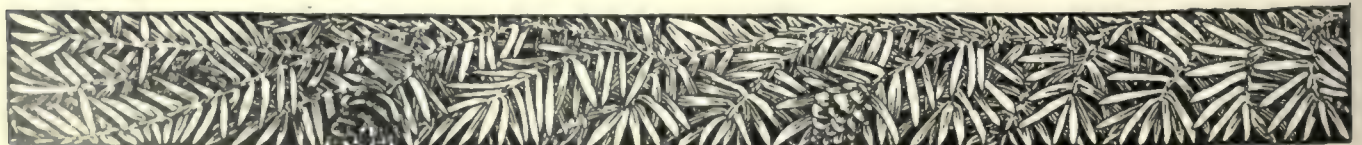
About this time Demophoon, having finished his visit, came home and learned with horror what had happened while he was away. He hurried to the almond-tree that had been Phyllis and, flinging his arms around the tree, he shed bitter tears and called to his dear playmate:

"Oh, Phyllis, how could you believe that I had gone away forever? You know I loved you far too well to even think of such a thing!"

And Phyllis heard and answered him. For as he spoke, the tree burst forth into a thousand blossoms which at first were white but, as he watched them, turned to a most beautiful and joyful pink.

Demophoon had made her happy again; and she has remained so ever since.

If you have ever seen an almond-tree in blossom you know that it is one of the happiest sights upon this whole, round earth.





### PEACE-TIME USES OF SITKA SPRUCE

Although Sitka spruce may never again be so eagerly sought and so extensively cut as during the war, it has so many superior qualities in the opinion of foresters and lumbermen that it will always play an important part in the lumber industry of the Pacific coast region. It grows rapidly, makes a large yield to the acre, lends itself fairly well to forest management, and produces a wood which has high value for many special purposes, prominent among which is the manufacture of paper.

The greater part of the virgin forest in which Sitka spruce occurs has not been reached by lumbering operations, according to Department Bulletin 1060, Sitka Spruce: Its Uses, Growth and Management, a new publication of the United States Department of Agriculture, prepared by N. Leroy Cary, forest examiner. Until recently the cut was relatively small. Sitka spruce was not well known in the world or national markets until an extraordinary demand for it arose during the war because of its superiority for airplane construction.

The total stand of Sitka Spruce in America is estimated at 40 to 44 billion feet. More than one-third occurs in Alaska, one-third in British Columbia and the remainder in Washington, Oregon and California. It does not ordinarily grow in pure stands, but must be logged in conjunction with other timbers—with Douglas fir, western hemlock, and western red cedar in Washington and Oregon, and with western hemlock in Alaska.

Sitka spruce forms only 1.5 per cent by volume of the total merchantable stand of timber west of the Cascades in Oregon and Washington. In British Columbia it comprises 6.7 per cent of the timber along the coast. Of the coastal forests of southeastern Alaska it forms about 15 per cent. Approximately 50 per cent of the entire stand of Sitka spruce is in private ownership.

In Washington and Oregon, the cut of spruce increased more than 50 per cent in 1918, practically all this was Sitka spruce. The cut in the United States increased very little, and in general is declining. For a number of years Maine was the leading spruce-producing state, cutting chiefly red spruce; but the pressing need for spruce aircraft lumber for war uses stimulated production in the Pacific Northwest to such an extent that in 1918 Washington took first place with a cut of more than 275,000,000 board feet. Oregon was second with a cut of more than 215,000,000, while Maine dropped to third place.

The varied qualities of Sitka spruce fit it for a wide variety of uses. It is the premier wood for the manufacture of aircraft. It is unsurpassed for pulp and is especially adapted for musical instruments.

It is also a desirable wood for boxes, crates, barrels, veneer and woodenware.

Copies of the new bulletin may be had free upon application to the department at Washington, D. C.

### A GOOD FIRE RECORD

Major R. Y. Stuart, the State's Chief Forester, presented a detailed report on the spring forest fire season to the State Forest Commission at its June meeting. He reported Pennsylvania's situation as follows.

"The record shows fewer fires reported than in the spring of 1921 and substantial progress made in other respects under the system of protection put into effect by it last fall.

"One of the remarkable but expected developments from the Department's new system was the service rendered in detection from the steel fire tower, of which fifty were erected last summer and fall. Over 80% of all fires reported were detected and reported from the Department's towers. When the increased number of towers contemplated are constructed it will be possible to thus detect promptly practically all fires.

"Another striking feature of the spring fire season was the promptness with which fires were reported and reached by the crews. This was possible through the close and efficient cooperation rendered the Department men by local individuals and organizations, and by members of other Departments."

### GYPSY MOTH ESTABLISHED IN CENTRAL CONNECTICUT

Winter and spring scouting by the Bureau of Entomology of the United States Department of Agriculture and State entomological forces shows that the gypsy moth is established over the entire central part of Connecticut. The new territory is as large as all the known infested area in the State up to this time. The area affected is that through which the main railroad lines run from New England into New York City, and the spread of the pest toward the great port is closely watched. It has now reached the New York State line in northwestern Connecticut.

### WOOD IMPERVIOUS TO DECAY

THE wood of the mangrove tree which grows abundantly in French Guiana, is said to be impervious to rot; at least, it has not rotted under the severest tests given it for four years by a French railway company. The grain of the wood is so close that it practically excludes moisture and it has the further protection of a large amount of tannin in its composition that prevents the invasion of insects and protects it from mold, damp, etc. Its discovery is important, especially to users of railway ties and telegraph and telephone poles.



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# CANADIAN DEPARTMENT

By ELLWOOD WILSON

On the 28th of May the flying boat of the Laurentide Air Service, accompanying a sister ship on its way to northern Ontario, discovered several serious forest fires. On returning to Grand Mere, these were reported to the writer. On the morning of May 31st a flight was made to locate the fires, ascertain the damage done and to plan for the control of the fires. Almost immediately the plane was in the air, smoke could be seen in heavy clouds to the north, and within an hour the scene of the first fire was reached. It seemed literally to be eating up the stands of conifers, and flames could be seen rushing up the trunks of the trees and rushing on before the wind. The fire was seen to have a front of about six miles, then there was a gap and to the west another fire with a front of fourteen miles was burning and sending up a barrier of smoke so dense that one could not see across it. The smell of smoke was distinct at five thousand feet. The areas already burned were noted and the plane pushed on to the nearest point where fire-fighters could be obtained and landed. The boat used for landing during the previous season had been taken away so that it was necessary for one of the crew of the plane to swim ashore with a line for mooring. The plane was refueled and the Company Depots were notified to send men by canoe, immediately to the scene of the fire. We heard that the Manager of the Fire Protective Association was on his way to take charge of the work, having left about ten in the morning by automobile. The plane had left at 12:30 and had arrived at the district headquarters, after looking over the fires at about two. The Manager hove in sight about four. He was immediately taken up in the plane to look over the situation and at eight that evening the plane started back to the base. About nine it was becoming too dark to land comfortably at the base so we dropped down at a Club and spent the night. The situation as seen from the air was so serious that a meeting of the Fire Protective Association was held and immediate steps taken to improve the service. All the fires but one seemed to have been set by men hunting, fishing and trapping in the woods, of whom there were many owing to the scarcity of work. The Fire Protective Association directors went to Quebec and met the Executive Council of the Government and the Premier and asked that the law, passed at the last session of the legislature, empowering the Minister of Lands to forbid all persons entering the forests without first securing a permit, be immediately put in force. The Cabinet, after the hearing, immediately issued an order-in-council requiring everyone going into the woods to

obtain a permit and the priests in all the parish churches were asked to give out the notice at the following Sunday service and the order was published in the newspapers. Men were appointed in all the towns and villages near the forest to issue the permits. The Government of Quebec is much to be commended for passing such important legislation and for the promptness with which the situation was met and the law enforced. From the 31st of May until the 10th of June the plane patrol was continued. Messages were dropped, ordering men on the drive to go and fight fire. The Fire Inspector in charge of the district was flown over the fire daily so that he might see how best to fight it, all the men fighting one fire were kept in provisions which the plane carried in, and men to take charge of the fire-fighting crews were taken to and from the fire by air. The fires this season have demonstrated that men traveling in the woods as patrolmen in canoes do not discover fires soon enough and are not able to visit their territory often enough. Also that fires can only be controlled by men who understand how to fight them, and who are willing to put their whole hearts and souls into the work. The idea that a fire once started cannot be extinguished is wholly erroneous and is but a confession of weakness on the part of the man holding it. Lookout stations, supplemented by air patrol, with planes to carry men, provisions and fire fighting equipment and to direct the fire-fighting will very soon make disastrous forest fires things of the past IF the personnel is right.

The first plantation of Norway spruce made by the Laurentide Company in 1914 has begun to seed and the seeds will be collected and planted to ascertain if they are fertile. A plantation of Scots Pine made in 1908 seeded in 1917 and trees from that first seeding are now about three feet high and growing nicely. Much white pine growing in eastern Quebec is subject to attacks of the white pine weevil and this has spread to plantations of Norway spruce and Scots pine, but has been controlled effectively by cutting off the infected shoots and burning them, and also by breeding the parasites. On the white pine and Norway spruce the insect commonly attacks only the leaders or terminal shoots, but on the Scots pine the shoots at the ends of the branches are also attacked.

The experience of planting Norway spruce so far, goes to show that it makes good and rapid growth on good soils, particularly if they are moist, but that it is a poor tree for poor dry soils. If the soil is too wet, as in swampy ground, it will not grow at all. White spruce on the other hand

seems to thrive in almost any situation, particularly the variety with needles of bluish-green color. In planting Norway spruce great care must be taken to see that the main root is not bent, otherwise the tree will thrive for a time and then suddenly die off.

The first number of a very good forestry journal in French has just been issued by the *Societe generale de Publication Ltce.* of Quebec. Its object is to popularize forestry, to encourage reforestation and forest protection, to develop local industries dependent on the forest, to encourage the proper use of the forest and the planting of trees along the highways. Articles on road maintenance, ornamental trees, uses of wood, court decisions and legislation of interest to owners of woodlands, and diseases of trees make up the first number. The magazine is illustrated and very well gotten up. Its subscription price is \$2.50 in the United States and \$2.00 in Canada.

The Dominion Forest Service is extending its experimental cooperative forest work and many sample plots are being laid out this season to determine the results of different methods of cutting in both coniferous and hardwood stands. The result of both clear and selection cutting on the reproduction will be studied and also how much of the overwood in mixed and pure stands should be removed to get the best reproduction. Experiments will also be tried by removing undesirable species and trying to foster the growth of the more desirable ones. Plots have also been laid out in natural reproduction where the young trees are thinned out to different distances apart to see what results can be obtained.

The purchase by the Hollingsworth and Whitney Company of timber lands in New Brunswick shows that American interests are looking to the future and buying lands in Canada to provide for the time when their American holdings shall become exhausted.

The Government Commission which has been investigating the management of the Department of Lands and Forests of Ontario, has recommended a reorganization of the Department on a business basis and Premier Drury is reported to have said that such a reorganization would be made.

The forest fire situation in British Columbia is the worst in years and the Forestry Service is having a very difficult time to get the fires under control.





Panorama of part of Weyerhaeuser operations at Cloquet, Minnesota



**T**HE longevity of lumber and the service it renders are largely dependent on correct seasoning. Weyerhaeuser mills have long recognized the importance of this. In the selection of their drying yards and in the building of dry kilns every factor that enters into the science of wood seasoning has been considered.

Take, for instance, the seasoning of Idaho White Pine thick finish at the drying yard of the Edward Rutledge mill. This stock is used for pattern making and other high class products. A special drying process is necessary to secure a superior product.

As the thick selects come from the green chain, the ends are sealed with Parowax, applied by an electric blower. This prevents too rapid drying which is often the cause of end checking.

The picture above shows the method of piling 10/4 and thicker selects in the seasoning yard. A one-inch cedar board, varying in width from eight to ten inches, is placed on top and on bottom of every piece of White Pine. This is termed "wrapping" and is done for the purpose of retarding the drying and thus preventing the formation of defects. Cedar is used because it will not stain.

Between each layer of wrapped selects are placed stickers to permit the circulation of air in the pile. In the center of the pile a chimney is left which helps to secure equal ventilation throughout the stack.

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A valuable guide, full of practical information both for the experimenter and beginner in nut tree culture and for the professional and commercial nut culturist, for it embodies the presentation of a simple, new method of grafting, overcoming many of the obstacles attending nut culture under the older, more difficult methods. Nuts having been established now as a staple article of diet, anything pertaining to the extension of this line of food supply would be a welcome contribution to our literature and Dr. Morris certainly offers this in his book. It is most interestingly as well as authoritatively written and is well worth reading.

*The Minds and Manners of Wild Animals*, by William T. Hornaday (Scribner's), New York. Price \$2.50.

It has been well said that no naturalist of the rank of Dr. Hornaday has ever brought together in a systematic and logical relation such an extraordinary mass of information on his subject as this volume includes and, best of all, it is based on his own actual personal observation during a life of hunting and collecting in all quarters of the world. It has commanded the attention of naturalists the world over and affords the lay reader a clear understanding of animal intelligence in a way which will claim and hold his interest.

*Trudy and Timothy and the Trees*, by Bertha Currier Porter. (Penn), Philadelphia. Price \$1.50.

A story full of interest for girls and boys from seven to twelve years. Trudy and Timothy tell of their trip to Washington and the big trees—how they met the forest-ranger, what tales he told them, how the President of the United States bowed to them and how the We-Four-No-More club saved Aunt Theresy's old trees is all delightfully described. You'll like it—there is no question about that.

*Shade and Ornamental Trees of California*, by Merritt B. Pratt, State Forester, California.

Dedicated to the memory of the late State Forester of California, G. Morris Homans, a pioneer of forestry in the State, his *raison d'être* being the stimulation of tree planting in California, a more perfect tribute would have been difficult to find. Mr. Pratt tells of the trees of California and pictures them so beautifully that pride in the publication cannot be confined to Californians—it must be shared by every citizen of the United States. The information the book contains is clearly and interestingly written and the pictures tell their own story.

### A BOOK ON DECAY

Thirty-five of the more common wood-destroying fungi are illustrated in "The Decay of Ties," by C. J. Humphrey of the Forest Products Laboratory. This book contains eight full page plates, three of them in natural colors, fifty-eight illustrations in all and gives descriptions of all the fungi presented. A simple key for field use in their identification is given as well as information concerning their relative decay producing power. This is a valuable book for wood preservers, tie producers, lumbermen, inspectors, forestry students and anyone else at all interested in the decay of wood. It gives a great deal of specific information not likely to be found elsewhere. It is bound in flexible covers and contains 35 pages.

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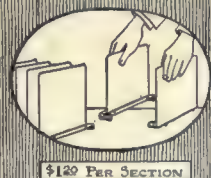
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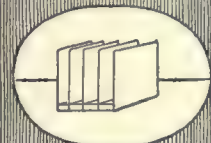
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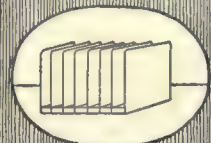
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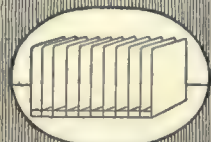
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## GILMAN, ILL.

By Knights of Pythias Lodge: Fallen Heroes of World War.

## GRAYS LAKE, ILL.

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## HAVANA, ILL.

By Woman's Utility and Interest Club: Julius Trimpe, Raymond H. Pfetzing, Paul Markley, Carl A. L. Koch, Horace S. Marshall, Harry A. Sargent, Harry L. Atwater.

## JOLIET, ILL.

By Louis Joliet Chapter, Daughters of American Revolution: Dr. William E. Harwood. By Woman's Club: Unknown American Soldier.

## NEOGA, ILL.

By Neoga Civic Club: Guy Wilson, Horace Lindley, Leonard McAllister, Max Pugsley, Hedric Rhodes, Leon Latimer, Ralph Swank, Howard Votaw, Don Colbert, Carl Bell, Ray Wilson, James Douglas, Tony Miller.

## OAK PARK, ILL.

By Daughters of American Revolution: Lloyd Havens Ghislin, Edwards Hall Berry.

## PLANO, ILL.

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## RARITAN, ILL.

By Mrs. Jennie M. Melvin: To Our Boys.

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By Civic Club: Francis X. Comley, William M. Comley, Arthur Triol Eissing, Lt. Joseph Simpson Ferguson, Lt. Carl C. Glantz, Sgt. Harry Ireland, Sgt. Edward W. Baird, Jr., Lt. W. C. Rock, Lt. J. Russell Rock, Bartlett Armbruster, James Barnes Arnott, Harold Dewey Atkins, Alfred Lowe Bailey, John T. Baker, Jr., Joseph B. Baltz, Malcolm Weir Bartlett, Col. H. I. Bearss, Corp. Archibald Wight Benners, Norman Paul Boggs, Thomas C. Boston, Lt. George Bower, Jr., Harold S. Boyd, Corp. Horace Super Breining, Norman Branson Brown, George Butterworth, Jr., Charles Y. Butterworth, Charles H. Button, Ellis P. Clark, Jr., Harold B. Clift, Greer Cromley, Corp. Harry Davis, Bernard J. Devlin, Charles Edwin DeVoe, Edward Dorsay, Corp. Howard Dorsay, William F. Driscoll, Lt. Joseph F. Driscoll, Leon F. Driscoll, Corp. Edward T. Dyer, Elmer Joseph Eggert, Waldron R. Farrell, Capt. John H. Fay, Harry James White Field, Hamilton Maxwell, H. Fleming, Neill Fredericks, William J. Given, Sydney Gest, Russell Gonafer, Lt. Henry L. Geyelin, Jr., Loyal Young Graham, 3d, Abiel J. Groves, Jr., Lt. Percy Glendinning, Robert C. Hackney, Orville Hansen, Paul Hanson.

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## FOND DU LAC, WIS.

By Kiwanis Club: Major-A. M. Trier.

## MILWAUKEE, WIS.

By Milwaukee County Chapter, American War Mothers: Those Who Died on Land, Those Who Died on Water.

## OGDEN, UTAH.

By Memorial Committee of Service Star Legion: Herman Baker, Alexander L. Brewer, Fred T. Cannon, Delbert Clark, Earl L. Cobb, John Doles, George H. Draper, Oliver R. Drysdale, Arthur Duffin, Leonard Guy Farley, John S. Ferguson, Anderson J. Fredson, Herbert E. Fowers, William B. Fowles, Albert W. Goddard, Fred D. Grant, Clayton B. Griswold, Ralph Hall, Raymond M. Holmes, Frank A. Isaakson, David E. Jespersen, Guy Johnston, Joseph Leo Jones, Marvin L. Jones, Bert Jorgensen, Demetrios Karvarites, Henry R. Kramer, George Liddell, Harry F. Malone, Frank W. Medell, Bert R. Miller, Walter A. Monson, Joseph C. Muir, John Mulder, Hugh Neville Parkes, Alvin L. Partor, William Price, Jr., David J. Rankin, Arthur Regan, Edward J. Rice, Orville J. Ruby, Fred C. Schmaltz, James Shaw, Glen O. Stallings, Arthur P. Thomson, Thomas Lewis, P. Alonzo Thomas, Don Crandall Wade, J. Blane Wall, Merle Wheelright, Joseph C. White.



## TOWN AND CITY STREET TREES

Oaks are considered by the United States Department of Agriculture to be the best trees for street planting. It is probable that oaks have not been more widely planted because of the prevalent belief that they are slow growers, and because in the North they are rather difficult to transplant. A white oak, however, which is one of the slow-growing varieties, will reach the same height as a sugar maple in the same period of time, and maples have been used much more widely than oaks for street ornamentation, despite many unsatisfactory characteristics.

Farmers' Bulletin, No. 1208, Trees for Town and City Streets, by F. L. Mulford, horticulturist, issued by the United States Department of Agriculture, describes in detail the various oaks for street use in different regions, as well as about 100 other trees or varieties. Elms are given second place in desirability for city streets and sycamores third. Maples are considered less desirable than has been generally supposed. Except the Lombardy poplar most varieties of poplar are not recommended.

The bulletin, which is available upon application to the United States Department of Agriculture, contains a regional map of the United States and indicates which trees flourish best under the climatic conditions of each region.

## BEAUTIES OF WHITE PINE

How the white pine, at one time America's premier lumber tree, combines the faculty of being ornamental as well as useful is demonstrated in a new United States Department of Agriculture single reel motion picture, "White Pine, Beautiful and Useful."

The new white pine film is replete with picturesque woodland scenes and contains much material of historical importance. Many famed colonial homes, which have weathered the elements for more than a century, tribute to their construction, became subjects for the camera in the filming of the white pine story. Among them are Longfellow's home at Cambridge; Hawthorne's famous "House of the Seven Gables," the "Witch's House" at Salem, around which a chapter of American history is written; the oldest wooden house in America at Dedham, Massachusetts, built in 1636; Christ's Church, Cambridge; the beautiful Lake George region and the pines of Kittery, Maine. Historic Mount Vernon and scenes about the Nation's Capitol at Washington add to the educational and pictorial value of the new Government cinema production. A warning of the dangers of the ever lurking blister rust, deadliest enemy of the pine, is sounded.

The United States Department of Agriculture will lend the film to exhibitors, free, for short periods, and will authorize the purchase of copies at the production cost of approximately \$37 each.

## THE PLANTING OF TREES

By Albert Stoll, Jr.

The planting of a tree is an act of faith. Faith embodied in a work of this kind is an exemplification of a most simple and genuine belief in the fertility and productivity of nature; a belief based upon the inexorable example and mute evidence uncovered along the by-ways and pathways of the out of doors; that nature will rear to healthy maturity any living thing that finds comfort, contentment and existence in her domain.

This is the same faith that laid the foundation of all agricultural development the world over.

In forestry, as in no other endeavor, this faith is often sorely tried. With a constant fear of the merciless, devouring forest fire; the unrelentless efforts of the invading army of millions of injurious insects; the terrific devastation of fungus growth and diseases; all arrayed against the growing things of the open and faced by the realization that a timber harvest comes but once in a generation; the incentive for the individual to put into practice reforestation or the planting of a tree, is invariably to be found at a low ebb.

However, the planting of trees on a great scale in America and in Michigan particularly, is an economic necessity. Trees give shelter to man and beast. They protect and preserve our water supply. They prevent soil erosion. They provide food and clothing for millions of Americans, by providing them with work. They build all our homes, our ships our factories. They protect our crops and keep fertile our lands that without their aid would soon become desert areas. They beautify the out of doors, ever inducing you and I to play in their domain. Trees are the very foundation of our progress and our lives; without them, the broad expanse of this much cherished country of ours would be a land of desolation and barrens.

The planting of a tree is an act of faith. Reforestation is the amplification of this faith. May it take deeper root in the being of every patriotic citizen of this State.

## ENGLISH WALNUT THRIVES IN WISCONSIN

JOHN AHLE, melon grower and resort keeper of Lake Noyebay, Marinette County, Wisconsin, planted an English walnut on his place in 1903. While the walnut is an unknown tree in upper Wisconsin, Mr. Ahle was satisfied it would grow. His friends were skeptical, declaring that even if it did grow he would never live to pick nuts from it. As he was at the time about 40 years of age, he was somewhat in doubt himself. But the nut germinated and a green shoot appeared and thrived, and Mr. Ahle is now reaping the reward of patience. He picked nuts from the tree in 1917, just 14 years after he planted the nut, and this fall he expects to harvest a quantity of nuts.

## AMAWALK NURSERY

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# Pleasant Things Taken from Letters to the Editor

"Permit me to state that I feel that there is no greater work of conservation being carried on today than that of the American Forestry Association."—*J. M. Paige.*

"I am glad of this opportunity to express to you my keen appreciation of the splendid work which the American Forestry Association is doing."—*Andrew J. Peters.*

"The Forestry Club at the University of California wishes to continue its subscription to AMERICAN FORESTRY for 1921. We find it of invaluable service and interest."—*University of California Forestry Club.*

"I love trees too well not to renew my subscription to AMERICAN FORESTRY."—*Eliza G. Clarke.*

"I think the December 1921 Number of AMERICAN FORESTRY the best that you have produced."—*H. F. Kean.*

"I don't see how I could do without AMERICAN FORESTRY. I look anxiously for each number."—*Laura Lively.*

"Cannot do without AMERICAN FORESTRY."—*Elizabeth T. Owen.*

"The May issue of AMERICAN FORESTRY has just been received and certainly has a wealth of interesting material in it."—*Horace M. Albright, Supt., Yellowstone National Park.*

"AMERICAN FORESTRY is excellent propaganda, and we are glad that it is accessible to the hundreds of young woodcrafters who come to Culver for our summer schools."—*A. R. Phinney, Librarian.*

"You are making a beautiful and helpful magazine."—*Miss J. E. Hussey*

"Let me take this opportunity to tell you how highly I value AMERICAN FORESTRY. It is always so well gotten up and your text matter is always so up-to-date and so interesting that I never fail to look forward to each issue."—*H. A. Lamb, Editor Agricultural Digest.*

"We thoroughly enjoy *American Forestry* for it is full of interesting information, has many suggestions and brings the refreshment of the great out-doors into our home."—*(Mrs.) F. G. Van Kirk.*

We subscribe to your magazine and find it most valuable in our work in botany and I personally enjoy the whole magazine very much."—*E. R. Viault, Instructor of Botany.*

"I cannot too forcibly express my appreciation for the splendid interest and active assistance you are giving us in our attempt to bring about, through education, a real public sentiment in favor of a forestry policy for Georgia."—*Wm. J. Rudland.*

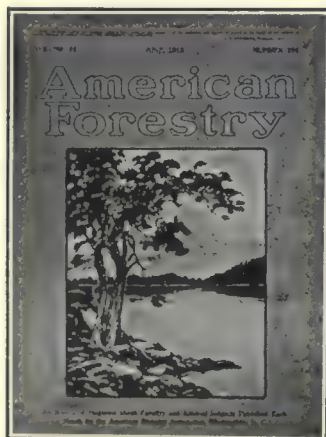
"*American Forestry* is in all respects a splendid periodical and our forests could not wish a more beautiful and efficient champion. The magazine passes from my hands to the McClellan Hospital at Cambridge, where its wholesome outdoor atmosphere and its realistic illustrations exert a quieting and healing influence. Also, the patients, having read the magazine, when they recover their health, will be disposed to conserve our trees and forests."—*Chas. A. Ingraham.*

"I greatly appreciate the value of your work."—*Leonce M. Soniat.*

## BECOME A MEMBER

Any person may become a member of the American Forestry Association upon application and payment of dues.

PLANT TREES  
PROTECT FORESTS  
USE FORESTS



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**COMPANY URGES CARE WITH FIRE**

"Be sure to extinguish match, cigar or cigarette before throwing away." This warning now appears on the cigarette packages of one of the largest American tobacco companies and is the first example of its kind in the United States.

Secretary of Agriculture Wallace, in whose department the Forest Service administers its 156 million acres of National Forests, wrote the tobacco company, expressing his gratification over their action.

"The fire danger incident to the use of matches and tobacco," writes Secretary Wallace, "is usually given little consideration by the vast army of smokers. Statistics compiled by the National Board of Fire Underwriters show that the annual loss from fires caused by matches and burning tobacco in the United States reached the impressive total of more than \$73,000,000 during the five-year period 1915 to 1919, inclusive. To this total must be added a considerable percentage of the unnecessary fire destruction in the forests of our country, where each year fires destroy or damage sufficient timber to build homes for the entire population of a city the size of Washington, New Orleans, Denver or San Francisco.

**BURNED FORESTS BUILD NO HOMES**

Every year forest fires in the United States destroy or damage sufficient timber to build houses for the entire population of a city the size of Washington, D. C.; New Orleans, Louisiana; Denver, Colorado, or San Francisco, California, according to a statement just issued by the Forest Service, United States Department of Agriculture, through "Safeguarding America Against Fire," the official bulletin of the National Board of Fire Underwriters. The area burned over each year, it is said, is equal to a strip ten miles wide reaching from New York City to Denver, Colorado.

The publication directs attention to the fact that fifteen years ago the bulk of public sentiment against forest fires was in the East. Today it is in the West, where 61 per cent of the remaining timber supply of the country is located. Over 81,000,000 acres of forest land that were formerly covered with timber are logged off or burned and completely denuded of tree growth. The solution of forestry problems, experts say, lies largely in fire prevention and reforestation.

The National Forests, which contain 498 billion board feet of merchantable timber, or 23 per cent of the remaining timber in the country, are said to bear an important relation to an adequate future wood supply for the nation. These forests are today receiving protection from forest fires and are being cut to a limited extent so as to

maintain a continuous production of new forests.

The fire loss in the National Forests was limited in 1921 to 376,208 acres. A total of 5,851 fires occurred, 75 per cent of which were due to human agencies and could have been prevented by care on the part of forest users. The direct loss amounted to \$212,182 worth of timber and forage destroyed, and \$512,106 was spent by the Forest Service in fire fighting.

Fires in the National Forests of Montana, Idaho, Washington, Oregon and California numbered 3,843, or 65 per cent of the total. In the National Forests of Arkansas and Florida, 354 fires burned over 118,500 acres.

**PENNSYLVANIA'S NEW NATIONAL FOREST**

The purchase of 74,025 acres of land to form the nucleus of the new Allegheny National Forest in Pennsylvania has just been authorized by the National Forest Reservation Commission. Twenty-seven tracts of cut-over and burned lands, on the headwaters of the Allegheny River in Warren, Elk, Forest and McKean counties, were contracted for at an average price of \$2.75 per acre.

"It is less than a year," stated W. W. Ashe, secretary of the Commission, "since authority was given the Federal Government to acquire land for National Forest purposes in Pennsylvania. By protection and systematic management, the cut-over lands so acquired will again be made to contribute to the timber supply of the state and nation, supplementing in this way the forests which the state itself is acquiring and putting under management. Because of its enormous industrial needs Pennsylvania ranks among the first in its timber requirements. Four-fifths of the lumber used by its industries and people is now produced outside its borders. For this reason the people of Pennsylvania are vitally concerned in the upbuilding of productive forests both in their own and in other states.

"There are in the United States 80,000,000 acres of at-one-time forest land now cut-over, badly burned, unproductive and contributing nothing to the timber supply of the country. In addition to being idle these lands tend to augment seriously the flood situation of our great rivers. This condition makes it important for the Government to acquire as soon as possible such portions of this land as most urgently require protection and are valuable as sources of future timber supply. With a view to meeting this condition the Commission has recently recommended an appropriation of \$2,000,000 for the fiscal year 1924 for further purchases."

**ATTENTION, FORESTER**

**AMERICAN FORESTRY** will print, free of charge in this column, advertisements of foresters wanting positions, or of persons having employment to offer foresters. This privilege is also extended to foresters, lumbermen and woodsmen who want positions, or to persons having employment to offer such foresters, lumbermen or woodsmen.

**POSITIONS WANTED**

**WANTED**—Positions by three High School Graduates for forestry work or woods work for the summer. Salary or location no object. Experience wanted. Box 3085, care **AMERICAN FORESTRY MAGAZINE**, Washington, D. C. (4-6-22)

**GRADUATE LANDSCAPE FORESTER**, experienced in both municipal and private forestry and landscape engineering desires position with a municipality or private concern. Address Box 3095, care **AMERICAN FORESTRY MAGAZINE**, Washington, D. C. (4-6-22)

"**LAND OWNERS**, are your holdings burdensome? Perhaps there is a better way of getting an income from them or turning them into cash than has yet occurred to you. It will cost you nothing to talk your troubles over with a **LAND SPECIALIST**, temporarily unemployed, with 25 years' experience at lumbering, forestry, farming and agricultural organization in the Northwest. Write description of location, topography, soil, etc., in reply." Box 4010, care **AMERICAN FORESTRY MAGAZINE**, Washington, D. C.

**FORESTRY COLLEGE GRADUATE**, 22, single, willing and capable, wants work with a forest products company or a research party. Not particular which part of world duties will lead to. Address Box 4000, care **AMERICAN FORESTRY MAGAZINE**, Washington, D. C. (5-7-22)

**GRADUATE FORESTER**—Experienced; eight years state forest management, four years nursery, landscape and horticultural work, desires connection with firm or individual interested in forests or nurseries for commercial purposes. Address Box 4020, care **AMERICAN FORESTRY MAGAZINE**, Washington, D. C. (6-8-22)

**POSITION WANTED BY A TECHNICALLY TRAINED FORESTER** at present employed as forest manager on one of the biggest private estates in Pennsylvania; 35 years experience. Can furnish the best reference. Address Box 4030, **AMERICAN FORESTRY MAGAZINE**, Washington, D. C. (6-9-22)

**FORESTER**, University Graduate; 28 years of age; ex-service man; several years' experience in the paper industry as an executive, also sales experience, desires position. Best references. Address Box 4040, care **AMERICAN FORESTRY MAGAZINE**, Washington, D. C. (7-9-22)

**YOUNG MAN**, 32 years old; married; graduate of Cornell University; B. S., 1914; M. F., 1915, with five years' experience in the United States Forest Service. Desires position as forester with a lumber company or private estate. The best of references. Address Box 4050, care **AMERICAN FORESTRY MAGAZINE**, Washington, D. C. (7-9-22)

**FOREST ENGINEER**, a graduate with eight years experience as chief of timberland department of large Eastern paper manufacturing company is open for position with company operating Eastern spruce lands. Address Box 4055, care **AMERICAN FORESTRY MAGAZINE**, Washington, D. C. (8-10-22)

**WANTED**

**WANTED**—**FORESTERS AND RANGERS** to act as District Superintendents and book orders for fruit and ornamental trees, evergreens, shrubs, etc. Pay weekly. Complete equipment. State territory desired. Full or part time. Address Box 3090, care **AMERICAN FORESTRY MAGAZINE**, Washington, D. C. (4-6-22)

**FORESTERS, UNEMPLOYED OR EMPLOYED**, having executive ability and possessing the gift to lead others, to write us. Great opportunity for those that qualify. State age, —reference—(2) if employed. School graduated from (years). Confidential. Rangers also answer this. Address Box 66-06, **AMERICAN FORESTRY MAGAZINE**, Washington, D. C.



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#### A PECULIAR GROWTH

This curious formation in a common European oak, better known as "English" oak on an estate at Newport, Rhode Island, is aptly called "The Little Old Man in the Tree." Photograph by Guy C. Caldwell.

#### BIG TIMBER SALE

The Forest Service of the United States Department of Agriculture announces the sale of 235,000,000 board feet along the upper Sauk River, Snoqualmie National Forest Washington, to the Sauk River Lumber Co., N. C. Jamison, president, of Everett, Wash. Areas adjacent to this tract, which are reserved for future sale, contain approximately 1,200,000,000 feet of timber. Under the proposed plan of forest management, the average yearly cut will be limited to 40,000,000 board feet. Forty years will be required to cut out the existing merchantable timber, by which time the present immature timber will be ready for the ax. By the practice of scientific forestry, logging operations can thus be carried on without end. The forests of the sale area consist chiefly of mature Douglas fir, hemlock, cedar and white fir in mixture. The contract price paid for the timber, which is subject to readjustment at three year intervals, was \$2.75 per 1,000 board feet for cedar, \$2 for Douglas fir, and 50 cents for white fir and hemlock.

#### LOUISIANA'S SUMMER FOREST SCHOOL

The second annual summer forestry camp of Louisiana started a six weeks' session June 19, with an enrollment of 56 students. Of these, sixteen were high school students, six high school graduates, twelve university students, eight public school teachers and fifteen division of forestry employes of the Department of Conservation. This school has the distinction of being the only practical summer forest school in the South. The Department of Conservation originated and maintains the summer school annually, cooperating with the Louisiana State University for the selection of the proper faculty in teaching the various technical subjects that are necessary to forestry education.

Each Wednesday afternoon lectures are given by prominent State and government officials and business men on various forestry subjects, lumbering and other industries connected with the forestry movement. One feature of the school is that all the employes of the forestry division of the Conservation Department are required to attend this school and take instruction on such forestry subjects as will lead to the betterment of their work in the various districts of the State. Forestry, as a rule, is taught under roofs, and the department's purpose is to teach the science in the open that the student can prepare his work in accordance with the actual conditions that exist in the woods around him.

Though Louisiana has been forging ahead in forestry work for some years, this type of education has pushed the State to the front as the pioneer in the South, and one of the leaders in the national movement.

The camp is situated in the famous reserve of H. E. Hardtner, Urania, Louisiana, the students living in properly constructed and well-floored tents, a commodious mess hall being situated nearby where the students are given substantial food needed by those living in the open; the rations consisting of good camp food, and vegetables secured from the farmers of the neighborhood. The students are divided into two classes—first and second year. In both classes are taught elementary surveying, timber cruising, mensuration, silviculture, and dendrology. It is the desire of the department to acquaint each student with the general elementary knowledge of what forestry really means and thus disseminate this knowledge among the neighborhoods and in the schools from which the students come.

Members of the faculty who have charge of the maintenance and instruction are: Prof. J. G. Lee, department of forestry, Louisiana State University, who is director of the camp; V. H. Sonderegger, superintendent of forestry, Department of Conservation, assistant director; H. J. Stahl, farm forester of the Department of Conservation, instructor; Prof. R. L. Read, formerly of Louisiana State University, instructor.

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Write for announcement giving full information.

## Bryant's Logging

The Principles and General Methods of Operation in the United States. By Ralph Clement Bryant, F.E., M.A., Manufacturers' Association, Professor of Lumbering, Yale University, 590 pages, 6 by 9. 133 figures. Cloth net, \$4.50

A discussion at length of the chief facilities and methods for the movement of the timber from stump to manufacturing plant, especially logging railroads.



# AMERICAN FORESTRY 375

THE MAGAZINE OF THE AMERICAN FORESTRY ASSOCIATION

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L. M. CROMELIN, Assistant Editor

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## CHANGE OF ADDRESS

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# "THE HALL OF FAME FOR TREES"



## The Old Red Oak at Lloyd's Neck

This beautiful old tree has been nominated for a place in the Hall of Fame for Trees with a History by Col. William E. Rogers, of Washington, D. C. It is located on the property of Mr. Walter Jennings, at Lloyd's Neck, on the North Shore of Long Island, and Colonel Rogers, whose old home is at Huntington, has known the tree well since he was a boy. In Revolutionary days the British occupied two strongholds on Lloyd's Neck—East Fort and West Fort—from which they levied tribute on all the surrounding country and which were for a long time their bases of supply. The oak is located about midway between the two forts, facing Halesite, a spot of historic fame because it was here that Nathan Hale, who only regretted that he had "but one life to lose" for his country, was finally captured. If the old oak could talk, it could doubtless tell many a thrilling tale—first of the earliest possessors of the land, the Indian braves; then of its settlement by the whites and of its later occupation by the British military forces and finally, years later, of the calm and peaceful days during the administration of President Martin Van Buren, who with his close friend, C. C. Cambreleng, the then minister to Russia, and Washington Irving, spent a great deal of time in the vicinity enjoying the fishing, than which there was none better. The old giant is 16 feet 8 inches in circumference three feet above the ground, by measurements taken three years ago, and the spread of its branches is 150 feet. It has been pronounced by experts to be at least 400 years old and Dr. Britton, of the New York Botanical Gardens, considers it the largest and finest specimen tree in the East. For a tree of its unquestioned age, its symmetry and beautiful form are remarkable.



# AMERICAN FORESTRY

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## FORESTRY AS A BUSINESS

By George H. Rhodes

Secretary, California Forest Protective Association

**B**EFORE the advent of man, land produces in accordance with natural conditions. After his advent, it gradually comes under cultivated or controlled production.

The continued prosperity and progress of a people depend very much on the use they make of the land. That on which annual crops will grow comes first under controlled production and cultivation. The areas which will not produce annual crops or which cannot be cultivated are the last to come under controlled production.

Forest and grazing lands form the greatest part of the latter areas, and, as natural conditions disappear, both require increasing attention to insure their continuous production under a certain necessary amount of control. Forest lands differ from all other lands in the period of time necessary to

grow a crop. This makes necessary an adjustment of economic conditions to meet that peculiar fact. The first

economic condition to be dealt with is the area of forest land necessary to meet the continuous needs of the people for forest products. If the time required for a crop to grow is 100 years it will require 100 times as much land as is necessary for an annual crop, since only one - hundredth of the crop can be harvested each year.

If 60 billion board feet of lumber are needed and an acre will yield 15 thousand feet average, then 4,000,000 acres must be cut over. With an annual crop this 4,000,000 acres could be harvested again the next year, but with timber this 4,000,000 acres cannot be



VIRGIN PINE, FIR AND CEDAR IN CALIFORNIA

There are taxation units in which the stand of virgin timber is inaccessible and will not be operated for years, hence a yield tax on timber would deprive the county of necessary annual revenue.

harvested again until 100 years or more hence; therefore, 100 times this area or at least 400,000,000 acres of forest

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land will be necessary. Having the necessary area of land the next economic adjustments are those covering carrying costs—taxes, interest, protection, planting, administration, etc., all of which must go on every year until the crop of timber is harvested and must finally be paid by those who consume or use that crop. Unless they can pay those costs the crop will not be produced because it will not pay. Herein lies the essential economic difference between virgin timber and grown timber which inevitably causes the latter to cost more and to decrease in per capita consumption.

Since these carrying costs will be paid by the ultimate consumer, the important question is, who shall assume them during the long-growing period?

Since the future users of forest products will pay the costs of growing the trees, in addition to the costs of manufacturing and distributing the lumber or whatever it is they need, there is no doubt that these costs will be paid in the end. During the long growing period they can be assumed by either private or public interests, or by both. Knowing that they will ultimately be paid, we can assume that neither private or public interests will lose on account of the carrying costs to provide forests for the future. In other words, it will be done on a paying basis, or at a profit.

Therefore it is not a matter of sentiment but a business proposition. Being a business proposition it must have all the elements of successful business, and this must apply to government as well as to private forestry.

This means that, from the beginning, every item of

cost necessary in the growing of timber must be taken into consideration as accurately as possible. And it means also that all the relationships and interests involved in the distribution of these costs must be given their proper place.

The items of these carrying costs are: Reforestation, either natural or by planting or seeding; protection, administration, taxes and interest. It is apparent that the first three will be the same to public or private interests, since either the government or a private owner will have to provide a stand of timber, if necessary, protect it from fire and other loss or damage, and carry on the business necessary to do these things. Administration includes also such studies and experiments as must be carried on to secure better methods of forest management and closer utilization of products. As to these items there will be only slight variations between public and private forest management. They will differ in different forest regions, but will be about the same for all in any given region, and will become standardized and quite reliable with the passing of time, so that their bearing on profitable forestry will become less and less uncertain.

The remaining two items, taxes and interest, have elements of uncertainty as to their amount and their incidence as between private and public forestry practice.

It is good business to understand these uncertainties as much as possible and to establish conditions that are essentially equitable among all interests and relationships. Since taxes and interest cannot be extinguished it follows that, if they can be avoided by one party by a



A CALIFORNIA MOUNTAIN RANCH

"The continued prosperity and progress of a people depend very much on the use they make of the land." This California mountain ranch has been cleared and will be used for farming, while the other cut-over land is reforesting and is used for timber growing. Originally this was a dense redwood forest.





THE DEEP, COOL SHADOWS OF A REDWOOD GROVE

Among the incidental public benefits of forests are health and recreational advantages that justify all the people in sharing the costs of protection and perpetuation.

process of shifting the burden, it will fall on the other party so heavily as to tend to put him out of business. This phase of forestry, in its bearing on the question whether it can be carried on by both private and public interests must be discussed frankly and fully.

As to interest, there is no question that private forestry must take it into consideration. The same money could be deposited in a savings bank at 4 per cent, compounded semi-annually, without risk or attention. Or, it could be invested in productive industry, involving some risk and attention, which would justify a rate of at least 6 per cent, compounded annually. Timber growing, being a productive industry carrying the same conditions, would be entitled to the same interest.

This interest would accrue on the investment in the land, the initial cost of securing a full stand of timber, and the annual costs of administration, protection and taxation.

Here arises a consideration bearing on private forestry that must not be overlooked. It can be carried on in connection with a manufacturing business or separately. If carried on in connection with an established lumber manufacturing and distributing business, private forestry might be practiced at a less rate of interest than when practiced separately. Unquestionably forest renewal in

connection with an established manufacturing and distributing plant will operate to make that plant and business permanent instead of temporary, to make it continuous instead of vanishing. On this account a value will accrue to the plant and business that will absorb some of the interest rate. Under certain favorable conditions this absorption might reach nearly 100 per cent. In other words, the value incident to making an industry permanent might offset the interest charges. But private forestry separate from the conversion and distribution of forest products is another thing. It must show a profit on merely growing the timber, just as the growing of agricultural crops must show a profit on production separately from manufacturing. In this interest on every dollar invested or expended must be allowed, if loss is to be avoided. This will apply to all cut-over or other forest land not owned in connection with and as a part of a manufacturing business. If this can be done with reasonable assurance and some prospects of profits besides, it will be practical. If not, then private forestry on such lands cannot be carried on.

As to public forestry, whether practiced by the Federal or State government, it is a common fallacy to say that there will be no interest to pay. To prove that this is a fallacy it is only necessary to remember that



capital is always worth something, whether used by public or private interests. If the government did not use the money for forestry it could use it for something else. If it did not need the money it could decrease taxes and leave it for the people to use. This is clearly true of the expenses involved, but how about the land? Will the government have an investment on which to pay interest?

The government can acquire forest land in three ways—by purchase, by forfeiture and by reversion. Under purchase there is no doubt about the investment and interest must be calculated from the beginning, and unless it is desirable or advantageous to discourage private forestry, the rate of interest for the government must be the same. Land acquired through reversion or forfeiture, if it can be used for forest growing, has a value for that purpose, and interest must be allowed on that value. If it is worthless for that purpose it has no value as forest land, hence does not come within the perview of this discussion.

Forest land reserved by the U. S. Government has the same value it would have had if not reserved. The government simply takes the place of a private owner, which makes no difference in the use or value of the land. Hence interest must accrue on that value which it would have had under private ownership.

The government cannot escape interest on investment because it will always be using land withheld from the people, or money taken from the people by taxation, for forest production. And there is no reason why the rate of interest should not be the same, unless private forestry is to be discouraged.

While the government, national or state, cannot escape interest as going into the stumpage value of grown timber to be paid eventually by the consumers, it can escape taxation by simply refusing to pay. Unlike a private owner, it cannot be compelled to do so. With all other financial considerations almost equal, it is clear that such discrimination in taxation will operate to prevent forestry by private interests. The margin between profitable and unprofitable forestry, in all but especially favorable sections, is so narrow that exemp-

tion from taxation will be fatal to the interests not exempt.

This brings up the question again, whether it is desirable or not to encourage private forestry. If there is a certain area of forest land in a taxation unit, all privately owned and taxed at a certain amount per acre, and the government, state or national, acquires half of it, then the taxes on that remaining in private ownership will be doubled. In this way the government can cause the forfeiture of much privately owned forest land and almost prevent the practice of private forestry. On the other hand, if the government will pay its just and equitable share of the annual taxes it will encourage

the practice of private forestry. In other words, if both private and public forestry are to go along hand in hand, the burden of taxation must be shared as nearly equally as possible. In order to secure this it might be claimed that all growing timber and the land on which it stands should be exempt from annual taxation, but subject to a yield tax at the time the timber is cut. This must be considered, however, from the standpoint of the taxation unit in which the forest-growing land is situated. That taxation unit, be it state, county, parish, district or municipality, must have annual revenue and that revenue must be certain. A yield tax alone will not supply certain annual revenue. If in a taxation unit there is an area of timberland subject to a yield tax and another area subject to an annual tax, the former can exist only because the



NATURAL REFORESTATION OF PINE TIMBER IN CALIFORNIA

Costs of taxes, interest, protection, etc., must go on every year until the crop of timber is harvested, and must finally be paid by those who use that crop.

latter is taxed every year. The latter carries practically the whole burden.

Now, if it were all placed under a yield tax then the burden of annual taxation on the other taxable property in the taxation unit would be correspondingly increased, which would be more inequitable and unjust than if only a part of the forest-growing land had been exempt from annual taxation under the yield tax.

It comes back to the proposition that all forest-growing land, whether publicly or privately owned must pay a certain annual revenue to the taxation unit in which it is located. In no other way can the carrying of an unfair share of the expense of supplying forests for the future by local taxation units be avoided. Of course



it timber were being cut in every local taxation unit under such conditions that the annual production would be uniformly certain and continuous, then a yield tax on both public and privately owned timber might be arranged. But there are such variations from this condition that a yield tax alone cannot possibly fill the requirements of certainty in annual revenue. There are taxation units in which the stand of virgin timber is inaccessible and will not be operated for years, hence a yield tax would practically exempt that timber from annual taxation and cause a corresponding increase in the burden on other classes of property. On the other hand, there are taxation units in which practically all the virgin timber has been cut and the young timber on these cut-over lands will not reach maturity in years, hence under a yield tax would pay no annual revenues. Between these two extremes are varying conditions and once in a while a taxation unit in which a yield tax on all timber would not make any serious difference, as compared to present conditions, but even there it would be only temporarily adequate and certain, and for that reason not practical.

It follows that the only solution is such an adjustment between a yield tax and an annual tax in such a way as to meet, as nearly as possible, the necessities of local taxation units and the economic conditions under which forests must be grown.

The first consideration in regard to a yield tax on timber is the part of the stumpage value of the timber that should be paid to the local taxation unit. Or, to

what part of the stumpage value of timber at the time it is cut is the local taxation unit justly entitled?

In a state where there are no National Forests this is a simple problem because all timber can be taxed the same. Although there are no National Forests there might be state forests, but the taxation on these and the privately owned forests could be made uniform under state laws. It would all be under state control and there would be no problem of adjustment as between state and national interests.

In such a state let us suppose that 10 per cent of the stumpage value of timber at the time of sale is to be paid in taxes, or that the rate of taxation on timber is 10 per cent of the stumpage value, to be apportioned to the state and local taxation units as provided. This should apply to both state and privately owned forest land so that both will be under the same financial burdens and contribute equally to state and local revenue. It might be claimed that the state is growing timber for the public benefit, but it is not. It is growing timber for the use and benefit of those who will need it in the future, and they will have to pay for it, including taxes with other costs. Certainly there will be incidental public benefits, such as protection of watersheds, health and recreational advantages and contributions to general living conditions, which will be the same from state and privately owned forests.

With state and private interests paying a yield tax of 10 per cent, each will have 90 per cent of the stumpage value remaining, out of which must be paid the interest



NEAR YOSEMITE VALLEY, CALIFORNIA

There are certain incidental public benefits from forests, whether publicly or privately owned, such as protection of watersheds and contributions to general living conditions.



on investment and all the carrying costs from the beginning. Suppose this leaves a profit. The private owner, of course, can use his as he sees fit, just as the growers of grain or corn can use theirs. The state can do the same, using its profits to buy more forest land or to build highways, or make other improvements.

There will be no trouble about using the profits of timber growing either by state or private interests. The important thing is that both be under the same system of taxation, if both state and private forestry are to be carried on.

While there might not be a profit when the timber is sold in the future, there must be entire liquidation of the carrying costs, taxes and interest. Nobody, neither the state nor private interest, is going to furnish forests for the future at a loss. Whatever the costs, they will have to pay. For this reason a yield tax of 10 per cent of the stumpage value of timber may be too high. I am inclined to think it is, because it is greater than the percentage of gross value of other crops taken for taxes, and it simply adds to the price that must be paid for lumber in the future.

This yield tax, whether it is 5 or 10 per cent, must be considered from the standpoint of the taxation units. They must have certain annual revenue. Under a yield tax on timber a taxation unit may have no annual revenue for many years, and it surely will never be certain. To remedy this there should be a flat annual acreage tax on the land, to be deducted from the amount of the yield tax when it is paid. In other words, there should be an advance payment on the land to meet the requirements for certain annual revenue, the final yield tax to be decreased by the total amount previously paid. Gradually, as the area of forest-growing land becomes stabilized and the annual cut of timber approaches uniformity, these two features of such a taxation system will be adjusted to meet conditions.

Let us try to visualize an example to show just how such a combination acreage and yield tax would work. Take a county (as a taxation unit), in a state in which there are no national forests, but where the state has adopted laws providing for state acquisition of forest lands and their reforestation and protection.

In this county there are 100,000 acres of land, of which 30,000 acres are forest land. Of this forest land 15,000 acres, privately owned, carry virgin timber, and 500 acres are being cut over every year, yielding 15,000,000 board feet of lumber, with a stumpage value of \$3 per thousand feet, or \$45,000. This timber and the land has been privately owned for 40 years, and the annual taxes paid up to this time amount to \$5 an acre. The average stand per acre is 30,000 board feet, worth \$90. A yield tax of 10 per cent would be \$9, from which the \$5 previously paid should be deducted, leaving \$4 an acre, or \$2,000 on the 500 acres cut, to be paid as the balance due in taxes on that 500 acres. If the amount

previously paid in taxes were \$7 an acre, then the remainder to be paid would be \$2 an acre; if the previous payments amounted to \$3, then the remainder due would be \$6 an acre, etc. In some cases the previous payments might be more than the 10 per cent yield tax, and so nothing would be due the county. The figures for no two taxation units would be the same, and yet it would work out equitably except in those few cases where the previous tax payments were greater than the yield tax.

The other 15,000 acres of forest land in this county carry young timber, 10,000 acres being owned by the State and 5,000 acres by private parties. All of it is protected from fire and is being brought up to full forest production as rapidly as possible. In addition to the yield tax there is a flat acreage tax of 10 cents an acre on all the forest land, which would yield an annual revenue of \$3,000 on the 30,000 acres, this annual acreage tax to be deducted from the amount of the yield tax at the time when the timber, either original or grown, is cut. It is to be noted also that all this forest land is under the same system of taxation, both the State and privately owned. And why should there be any difference?

Both the state and the private owner are using land for the production of a necessity. That product is growing under the same natural conditions, whether on state or private lands, requires the same care and protection, and will be marketed finally under the same economic conditions as to use and value. In other words, it will be sold under the laws of supply and demand, which will not vary whether the products come from public or private lands. The lands on which these forest products grow, both public and private, are located within the boundaries of a county and both receive equal benefits of the county government, such as the protection of property, the administration of justice, the educational system, the activities for progress and development, etc. In every conceivable way these benefits will be equal to both the public and private forest land, so why should both not contribute equally to the necessary funds for the county, or other taxation unit?

Both the state and the private owner are working under the same natural conditions to do the same thing—grow timber—and there is no reason why they should not work under the same economic or financial conditions. If the state forest land is to be exempt from annual taxation, then the annual tax on the privately owned forest land will be doubly heavy. If both are exempt then the other taxable property in the county will have to carry the burden, which will be absolutely unjust. As the ultimate consumers will have to pay the costs of growing the timber, whether on public or private lands, let these costs include the taxes on all these forest lands necessary to pay their just share of the expenses of maintaining the local government under which the timber was grown.



# THE CREATION OF THE EASTERN NATIONAL FORESTS

By W. W. Ashe

Secretary, National Forest Reservation Commission

ELEVEN years ago the great area between northern Alabama and Maine, including the most accessible and heaviest stands of hardwoods in the United States, was without a National Forest. Today within this area the purchase of 2,148,000 acres is being consummated under the authorization of the National Forest Reservation Commission. The Act under which purchases are being made was passed after more than ten years of agitation on the subject and after numerous bills had been introduced, only to be turned down by committees. As finally passed on March 1, 1911, the so-called "Weeks Law" restricts purchase to such forest lands as are influential in protecting navigable streams. It consists of two parts. One provides for cooperation in forest protection between the Federal government and such states as meet certain conditions; while the second authorizes the purchase of lands which have an influence upon maintaining the navigability of streams. It is thus seen that the measure is comprehensive. It was realized that it would not be possible or even practicable for the Federal government to acquire all forest lands which might be influential in the protection of our many navigable streams. For this reason the feature embodying cooperation between the Federal government and the states in the protection of lands against fire was incorporated with a view to extending the beneficial influences of the forest in this respect. This has proved a wise provision and has undoubtedly led many states which otherwise would not have acted to make the required appropriations to secure the benefit of Federal aid. The provisions for purchase were well hedged with safeguards. It is required that the Geological Survey shall first determine that the areas selected for purchase are of such a character that the navigability of streams will be promoted through the protection or maintenance of forests thereon. The law creates a commission con-

sisting of the Secretary of War, who is president; the Secretary of Agriculture, the Secretary of the Interior, two members of the Senate and two members of the House of Representatives, and it is necessary for this commission to authorize the acquisition of any lands before they can be purchased. This commission began functioning in 1911 and it is fortunate that two members of the original body still serve and are acquainted in detail, through personal inspection, with much of the land which has been acquired.

It is further necessary that the states within which purchases are to be made shall give their assent thereto by appropriate legislation. Although the commission under the general Federal statutes and the Acts of consent passed by the several states has ample authority to acquire lands by condemnation, it has as a rule been its policy to resort to condemnation only in cases where the title situation was such that it was not possible to acquire a clear title from the proponent, and seemingly the ostensible owner of the property, without resorting to the courts. The lands consequently have been acquired and prices fixed as a result of direct negotiations with the owners. Lands are acquired only within definitely located areas with a view to assembling a minimum area of 100,000 acres, or one which will admit of economic administration. These areas are called "Purchase Units," but when sufficient land is purchased the



HILLSIDES ONCE HEAVILY FORESTED

Now denuded, gullied and unprofitable. So sterile that they do not even afford scant pasturage for sheep. The soil that each rain removes from their slopes fills the channels of our streams, and necessitates the constant expenditure for dredging for its removal. The eastern National Forests are designed to correct and prevent such conditions as this.

President proclaims them National Forests and they are then administered in the same manner as other National Forests.

The total area of the forest lands now acquired and being acquired under the authorization of the commission is 2,148,648 acres. These lands are located in eleven states. In ten states the forests are being built up entirely by purchase unless exception be taken to the Alabama National Forest, within which there was a meager nucleus of 18,000 acres of public domain around which





#### THE COLUMN OF SMOKE BY DAY HERALDS DESTRUCTION AND WASTE

It may be the accumulated growth of a century which is disappearing. It may be the waste and lappage which the lumbermen have left behind, with young trees and all possibilities of a future forest. In either case it is economic loss.

have now been assembled an area of five-fold extent. In one state, Arkansas, purchases have been designed merely to consolidate the Government holdings on the Ozark and Arkansas National Forests which were created from the public domain. Until recently purchases have been restricted to the White Mountains in New Hampshire and Maine, the Appalachians south of Pennsylvania, and the Ozarks of Arkansas, but the commission has recently authorized the purchase of 74,000 acres in Pennsylvania.

The original program called for the purchase of 6,000,000 acres, one-third of which has now been acquired. In the White Mountains the purchase program is about one-half completed, there having been acquired about 450,000 acres out of a total designated area of 950,000 acres.

The larger portion of the lands which have been acquired have had the timber cut off, or at least some of the best timber has been cut, but a number of fine stands have been secured within which there has never been the sound of the lumberman's ax; and there is valuable timber on much of the other lands in addition

to much timber of low grade. There are some large tracts which have been badly injured by repeated fires. Their value for watershed protection had been greatly impaired through the destruction of the absorbent forest humus and the resulting erosion; and likewise their capacity for growing timber had been reduced. In places the protection which has been given by the government has already resulted in a wonderful change in some of these burned over lands. There are also small areas of open land which at one time were fields on farms. The owners found such lands were too steep for permanent and profitable cultivation. Many of these little mountain clearings are so deeply gullied that it will be years before the gullies will fill up and the surface again become smooth and the original fertility of the soil restored. Most of these open lands are gradually restocking in trees by seed from the nearby forests. There are also small and relatively insignificant areas of barren lands, largely mountain tops and sub-Alpine lands, which were acquired in purchasing larger tracts of which they formed a part. But on the whole, 95 per cent of the more than two million acres is productive forest land or is



potentially productive requiring merely protection from fire for a reasonable time. On the recently established Allegheny Purchase Unit in Pennsylvania there are considerable areas of badly burned land, but it is believed that even these areas can eventually be made to contribute to the needs of the highly developed industrial region within which this purchase unit is situated.

The government began purchases in the White Mountains just in time to assure the preservation of their forest cover, for, following the example of the government in protection, several owners of large holdings in these mountains are likewise carefully protecting their lands from fire as the timber is cut off; thus permanency of forest cover has been assured. Some concerns are even employing, at least in part, the government's methods of conservative cutting. It is not intended to imply that the fine stands of old spruce have been preserved throughout the White Mountains, although this has been done in part within some of the highly scenic areas such as Tuckerman's ravine, on the slopes of Mt. Chocorua and within the Great Gulf. But these mountains have been saved for the use of the people before they were stripped of their trees and before their surface was burned over and made a dreary waste such as has been the fate of much of the once fir and spruce clad slopes of the Black Mountains in North Carolina and of portions of West Virginia. The pointed fir still maintains its verdure and although much of it is in young stands, these have followed mature forests which supplied natural and economic needs. In due time they too must

fill their highest utility. But for the inauguration of the government's policy of purchase and protection in the White Mountains it is probable that a large portion of the lands there would have been closely stripped of timber on account of the high prices which prevailed for wood, even of small size, for the manufacture of paper. Once these lands were rendered unproductive, on account of their closely cut condition, they would have been neglected, if not abandoned; would have been

ravaged by fire, and left in a desolate condition, such as actually has been the case within restricted areas. There are certain lands, especially at high altitudes, on which it may not be desirable to cut any timber, or, if cut, the fellings must be conservative, since the protective function of the forest is of paramount consideration on such sites. The general policy, however, will be to cut the timber in such manner as to stabilize the yield and thus promote the establishment of permanent wood-working industries in place of the transient operations which have heretofore characterized the region. The result of protection to the cut-over lands is finely shown in many places in the White Mountains. In no place, how-



THE ABUNDANT GENEROSITY OF NATURE

On land which has been cut over under the Government's directions the pointed fir still maintains its verdure. These young stands have followed mature forests which supplied natural and economic needs.

ever, is it better exemplified than on Hubbard Brook, the town of Woodstock, Grafton County. Here a wonderfully thick and most beautiful stand of young spruce trees has established itself. It is already a solid mass of green 10 to 15 feet in height. Within a few years as the trees become larger the moss will again form a velvety rug and the dense thicket of saplings will open up into the mature forest with its dense shade ever



alluring the tramp to further explore its cool and refreshing recesses.

The White Mountain National Forest is designed to protect the headwaters of the Connecticut, Saco, Merrimac and Androscoggin Rivers. Although the Merrimac is navigable and has important water traffic in coal and petroleum, it is chiefly noteworthy as having its water powers highly developed and for the large number of textile mills which line its banks. The total possibilities of the stream developed and undeveloped, in New Hampshire and Massachusetts, exceed 100,000 horsepower; while those of the Androscoggin in Maine and New Hampshire amount to 260,000 horsepower.\*

One of the most important streams heading in the southern Appalachians is the Tennessee River, on which is located the Muscle Shoals which with other nearby power sites has around 1,000,000 latent horsepower possibilities.\*\* The main channel of the Tennessee River is navigable for a distance of 650 miles above its mouth where it joins the Ohio. The annual traffic upon it amounts to three quarters of a million tons. Its headwaters are in southwestern Virginia, western North Carolina, northern Georgia, and southwestern Kentucky, and are in part protected by five National Forests—the White Top, Pisgah, Savannah, Georgia and Alabama. All of these forests are within the field of heavy rainfall as much as twenty inches having fallen within two days' time at certain points. There is relatively little snow and consequently the soil where unprotected by

forest is subject to the devastating influence of concentrated precipitation practically throughout the entire year. The result of this is that erosion is here excessive and sedimentation in the channels of streams is a serious problem. This condition is not limited to the Tennessee River but also applies to other streams which have their source in this region. Some of these like the Black Warrior, one of the important rivers of Alabama whose headwaters are in part protected by the Alabama National Forest, are important power streams as well as having been developed for navigation by a costly system of locks.

The flood situation on the Ohio River has long been a matter of serious concern to the National Forest Reservation Commission. Special consideration has been given to the situation at Pittsburgh. This led the commission to authorize the establishment of a purchase unit in Pennsylvania on the headwaters of the Allegheny river, since it seemed desirable that the watershed of the Allegheny be protected as well as the Monongahela River, the southern headstream of the Ohio. Thus it inaugurated the principle of protecting on the Ohio River both of its head streams which unite at Pittsburgh. The plans for the control of flood waters on these streams called for the establishment of a series of storage reservoirs and in order to secure permanently full benefits from such reservoirs it is essential that erosion be reduced to a minimum to prevent the loss in storage through silting. It was not until 1921 that the legisla-





ture of Pennsylvania authorized purchases in that state for National Forests by the Federal government. The establishment of the Allegheny Purchase Unit was the result. This unit has a gross area of more than 400,000 acres, within which the purchase of 74,000 acres has just been authorized by the commission. This unit, which in time will become a National Forest, will very largely protect the drainage basins tributary to two of these proposed reservoirs on the upper waters of the Allegheny River. Within its borders is the seat of the last white pine operation of magnitude in Pennsylvania.

Neither should the recreational advantages of the eastern National Forests be overlooked. While the purchase of scenery and trout streams has not been an objective, it is nevertheless true that there is much on the purchased forests to lure the vacationist. Mr. Thomas H. Gill has recently considered their recreational features in the May issue of *American Forestry*. He particularly calls attention to the accessibility of the eastern National Forests to the massed population of the Atlantic Seaboard. They are located from Maine to the mountains of northern Alabama and Arkansas and are within easy reach of four-fifths of our population; and offer varied conditions and sports to the vacationist.

While the underlying function which has guided the selection of the areas within which lands are being acquired is the protection of navigable streams, and for that reason it has been necessary to restrict purchases to the rougher and mountainous lands or such as are a menace through erosion, their value for timber production has not been lost sight of. Since the enactment of the Act there have been radical changes in the economic timber supply situation in the eastern states. Ten years ago southern yellow pine controlled the eastern market for structural wood. Today it is realized that the zenith of yellow pine production has passed, that its cut is well on the wane and the field which it has lost has been taken by woods from the northwest coast. This condition leads to the realization of the impending crisis which must soon be faced in the East when the greater

part of the timber required for its industries must be brought from a great distance with the accompanying high freights. Pennsylvania, at one time producing timber for export, now manufactures only one-fifth of the lumber required by the state. Ohio, another leading industrial state, produces within its borders only one-eighth of that required. Illinois, formerly dependent entirely on timber from the nearby states to the north, now pays a freight tax of more than twenty-five million dollars a year to supply its needs by bringing timber from a distance. Still further changes are imminent. With a further reduction in the supply of yellow pine timber it will become necessary to fill its place with material from a greater distance. To assist in meeting this situation, the eastern National Forests should be greatly expanded. It is necessary that this enormous area of cut-over land, now largely unproductive, should be placed on a productive basis as soon as possible that it may be adequately protected and managed with a view to meeting this impending timber shortage.

The adequate expansion of the eastern National Forests and the maintenance of the forest lands of the East on a producing basis is as essential to Pennsylvania, Ohio, New York, and Illinois, which are large consuming states, as it is to the states within which the large forest areas are located. As a matter of fact these are the states which will profit most, since the regenerated forests will assist in supplying timber for their industries and domestic needs. It means not only the maintenance of their wood-using industries but an enormous saving in freight.

Looking toward the continued growth of these forests the National Forest Reservation Commission at its last meeting went on record without a dissenting vote of those present, in favor of a yearly appropriation of \$2,000,000 for the purchase work. This would be a return to the prewar basis, the original appropriations being at the rate of \$2,000,000 a year.

*\*Report Commission of Water Conservation of New Hampshire, 1911, 1918.*

*\*\*J. C. Welliver in Am. Rev. of Rev., April, 1922.*

From the United States Forest Service, Intermountain *Daily News*, comes this cheerful bit of philosophy:

### BE THE BEST OF WHATEVER YOU ARE

"If you can't be a pine on the top of the hill,  
Be a scrub in the valley—but be  
The best little scrub at the side of the rill;  
Be a bush if you can't be a tree.

"If you can't be a bush be a bit of the grass,  
Some highway to happier make,  
If you can't be a muskie then just be a bass—  
But the liveliest bass in the lake!

"We can't all be captains, we've got to be crew,  
There's something for all of us here;  
There's big work to do and there's lesser to do,  
And the task we must do is the near.

"If you can't be a highway, then just be a trail,  
If you can't be the sun, be a star;  
It isn't by size that you win or you fail—  
Be the best of whatever you are."



# THE AIRPLANE--"WATCH-DOG C

By Stuart Moir, Assistant Forester

**E**XPERIENCE with the airplane during the recent fires in the St. Maurice Valley of Quebec proves its value as the fire-fighter's aid. Just as airplanes were used during the war to reconnoitre enemy positions so they have demonstrated their worth as a means of scouting forest fires. A daily aerial reconnaissance of the forest fires, which the writer was fighting with the aid of 60 men, supplied the information which enabled him to get it under control. The type of machine used was an H. S. 2. L. flying boat equipped with a 330 H. P. motor.



## FOREST FIRE AND ITS WORK

*Upper*—Hopping off again after landing the daily supply of provisions and reporting on the progress of the fire-fighting.

*Middle*—As the aerial observer sees it. Note how well the lakes and streams show up in respect to the direction of the fire.

*Lower*—A twenty-five year old Balsam Fir stand after it was swept by fire. Not a single young tree remains alive.

On May 30th word was brought in by the patrol of the Laurentide Air Service, contractors for aerial work to the Laurentide Company, Limited, that a serious fire was burning along a six mile front north of Lakes Grand Chienne and Big Eagle. Men were immediately ordered to go to the fire by land route and to take two weeks' provisions. The following day a flight was made to reconnoitre the burning area north of Lake Chienne and to determine the best means of combat. As soon as the plane had reached its altitude huge columns of smoke were seen rolling skyward to the west and north, and when within 50 miles of the fire, the air was pungent with the odor of burning Spruce and Balsam.

Flying at 3,000 feet it was possible to see the outline of the fire in detail and to decide exactly where the fighting gangs should be placed to do most effective work. Although only 70-80 minutes were required to fly from the base to the fire, two days were consumed by the first gang of 22 men taken from the nearest drive camp to arrive upon the scene of action. Travel by canoe and portage through rough country transporting equipment and provisions is slow and tedious work. Arriving late in the afternoon the men pitched their tents, made the camp, and prepared the fireplace for the cook. In any woods organization the cook is the king-pin in maintaining the morale of the gang.

At daybreak the following morning the men were attacking the fire at its most dangerous point. Trees were chopped, fire lines cut through the leaf litter to mineral soil, sand thrown on burning stumps, and logs to smother the fire and water used wherever available. It is hot gruelling labor, for fires must be strenuously fought to be mastered. The first break comes at 9 A. M., when one-half the gang is given a rest and something to eat—meanwhile the rest of the gang stick to the job and are relieved as soon as the others return to the fire line. Fighting continues until 2 P. M., when a halt is called. At 6 P. M.



# CANADA'S FOREST RESOURCES"

Lurentide Company, Limited

the struggle is resumed and lasts until dark. the fires in this part of the country die down ably during the night and in the early morning present only a smouldering line to the fire-fighter. The most effective work is done between dawn and 10 o'clock in the morning; as at that time the flames are fanned up with increasing fierceness.

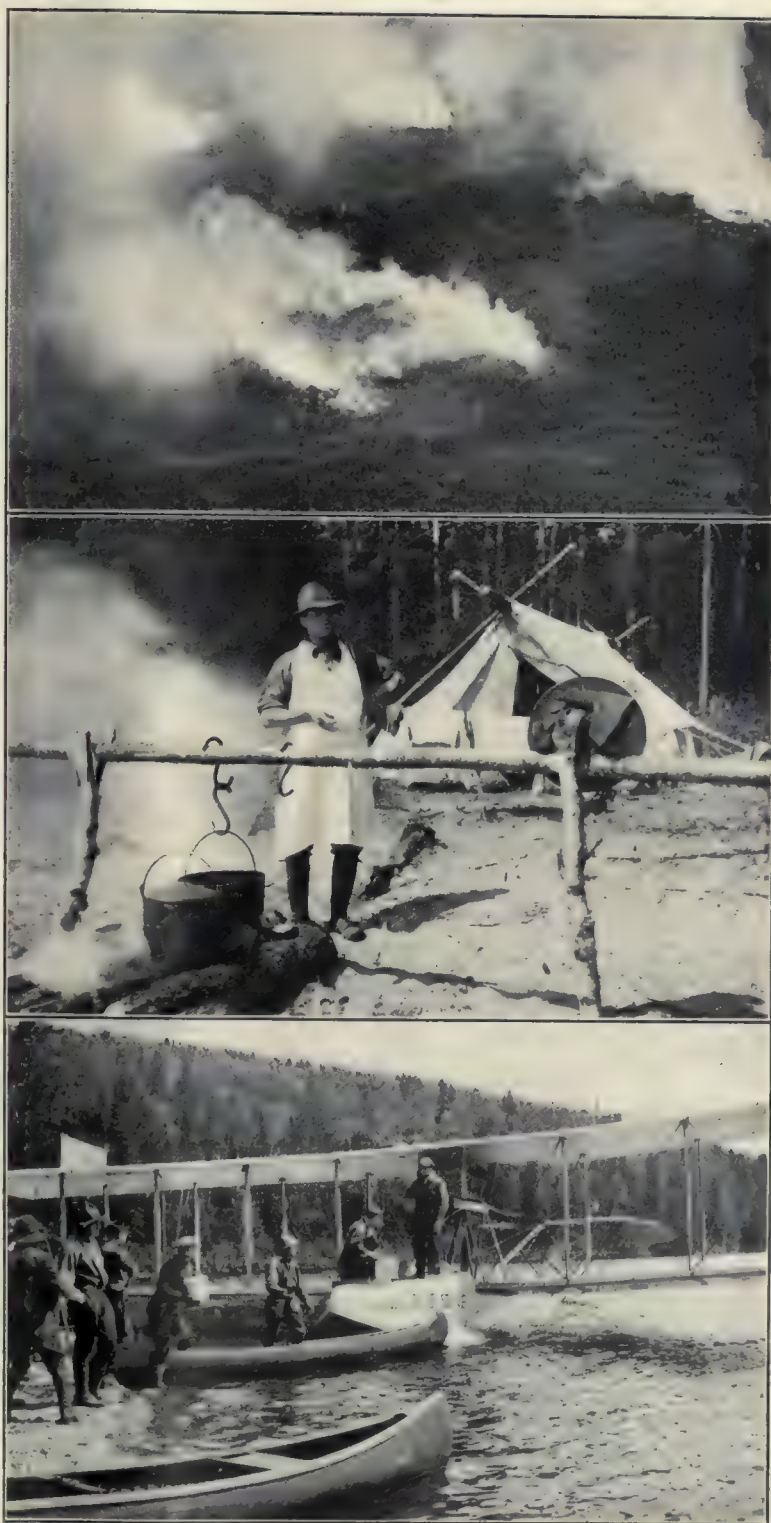
An aerial observation of the fire was made each afternoon to determine the results of the morning's work, to note any new outbreaks, and to see what part of the line required immediate attention. Daily during the progress of the fire the airplane brought in supplies and equipment. Without its services the fire crews would have been hard pressed for grub, for the first gang was augmented by the arrival of drive gang Number Two, including 32 men and also several rangers and guides, making a total force of 60 men. The last party had purposely travelled light in order to make the trip as speedily as possible. Complete reliance had been placed in the airplane to bring up the necessary supplies and equipment. It never failed in its duty, weathering smoke, wind and rain, and all adverse flying conditions.

Many of the fire-fighters had never seen an airplane prior to the arrival of the patrol machine on Lake Chienne. Their exclamations of awe and admiration were amusing; they marvelled at its size, the rapidity of its descent to the water, and the ease and grace with which it alighted on the lake. The members of the gang who were fortunate enough to touch the body or wings of the machine were regarded as heroes by their comrades. In the future they will frequently see an airplane flying over the country, for the air patrol has come to stay as the watch-dog of Canada's forest resources.

The ability of an observer in an airplane to detect a small trace of smoke at a long distance has been strikingly illustrated. In a recent instance the observer saw smoke rising from a lake shore some twenty miles off the machine's course, and the plane was diverted to this. Examination proved it to be a case of brush-burning behind a camp. Knowing that men were present and that there was no hazard, the plane was continued on its journey.

The experience gained in the use of the airplane in fighting this fire proved it to be the most effective auxiliary available to learn the exact condition of the fire. Anyone who has fought forest fires knows what a num-

ber of false rumors and conflicting reports are brought to camp as to the location of the fire. A change of wind



THE FORCES AT WORK TO CHECK DESTRUCTION

Upper—A natural heritage being consumed by the demon fire because "somebody was careless."  
Middle—No stove is needed by this cook in a woods camp. Bread and beans are baked in the sand, and other food over the fire.  
Lower—Unloading provisions for fire-fighting forces at work on Big Lake Chienne.



may deceive the experienced woodsman into believing that the fire is burning in a locality other than its exact location. The ground patrol system, when it follows only stream courses and beaten portages, is essentially weak, for it is impossible to detect a small fire until very close to it, and difficult to definitely locate a large fire under certain wind conditions.

When the supervisor of a fire-fighting force uses an airplane in scouting burning areas, he obtains definite information as to recent developments and seriousness of the fire. Furthermore, he is able to grasp the demands of the situation and strategically fight the

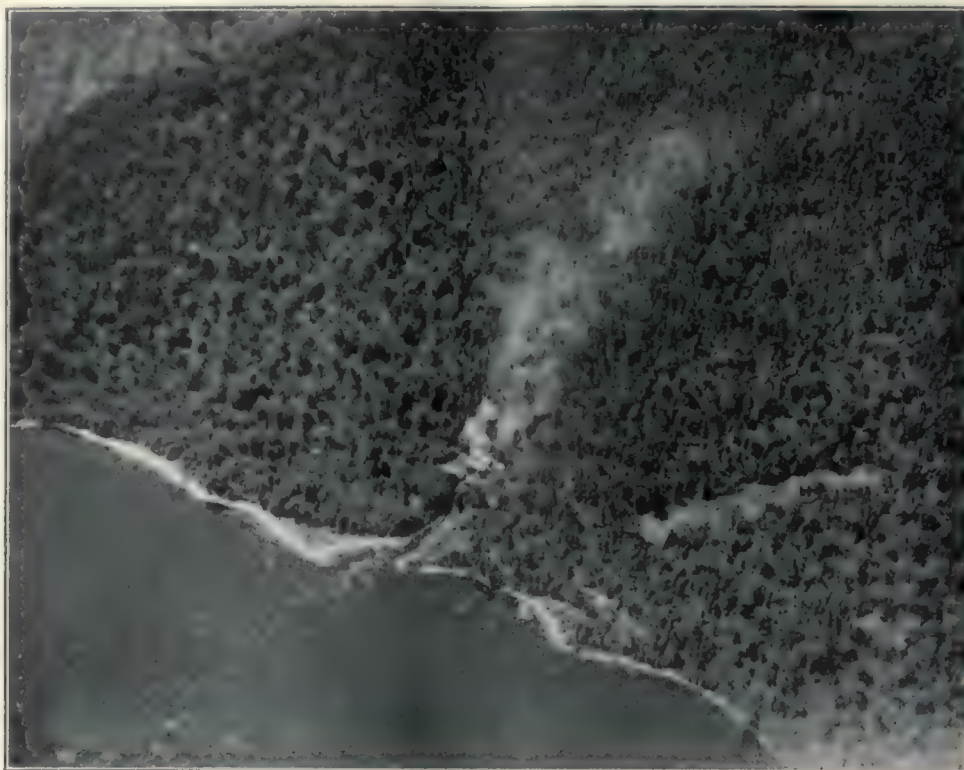
fire by taking full advantage of the topographic conditions which will assist in controlling the fire.

All persons connected with the timber industry fully realize the need of stopping our present annual devastation of forest resources by fire. It is useless for foresters to make plans for sustained yield until the stands

to be put on such a basis are protected from fire. Underlying the whole problem of fire protection is the necessity of a public sentiment supporting the system. The present false idea of many people employed by

the forest industries as well as those using the forest for sporting purposes, regarding fires, is deplorable. Until the forest is esteemed by all as a source of individual prosperity and happiness, no system of protection, however well developed, will be entirely successful. Prevention of forest fires is essential.

The role of the airplane as a fire-fighting auxiliary is permanently established, for it is the



THE TELL-TALE SMOKE COLUMN

This column of smoke was seen by the men in the airplane while yet twenty miles away from it. The character of the forest, which is a mixed hardwood-coniferous stand, is easily discerned. Adequate fire protection is a paramount need and must precede any system of forest management.

means of detecting fires and reconnoitering burning areas. The value of its services in recent fires is inestimable, for in addition to serving as a scout, it transported the men, equipment and food demanded by the emergency of the situation. The airplane as the eyes of the fire-fighter and watch-dog of our forest resources is unbeatable.

**T**HE most widely distributed commercial tree on the Tongass National Forest, southeastern Alaska, is western hemlock. It is a rapidly growing tree and is suitable for either mechanical or chemical wood pulp, either alone or in mixture with other species. It is conservatively estimated by the Forest Service that it forms 60 per cent of the merchantable stand. This species is being extensively used for paper pulp at a number of plants in British Columbia.

**T**HE forest problem is in many ways the most vital internal problem before the American people today. Theodore Roosevelt.

**O**NE ton of newsprint requires 1,600 pounds of ground wood pulp and 540 pounds of sulphite, and 7,500 acres of pulpwood are required to furnish the paper for all the Sunday papers in the United States.

**I**T is claimed to have been discovered that out of 6,600 species of flowers cultivated in Europe only 420 possess an agreeable perfume. Flowers with white or cream-colored petals are frequently more odoriferous than others. Next in order come the yellow flowers, then the red, after them the blue and finally the violet, of which only thirteen out of 308 give off a pleasing perfume. In the whole list 3,880 varieties are offensive in odor and 2,300 have no perceptible smell, either pleasant or unpleasant.

**T**HE following is an excerpt from an article appearing in the May *Cosmopolitan* by Irvin Cobb entitled "The Bear That Hunted Me."

"Or deeper still in the woods you may meet the ranger himself, a gallant figure in his greenish drab uniform. Usually he is young; always he is competent; nearly always he is deeply in love with the work he is doing."



# EDITORIAL

## LOAVES AND LUMBER

**I**F only one bushel of wheat out of every four grown in the fields reached the consumer, the American public would have something to say the minute the price of wheat began seriously to affect the customary size of loaves in the Nation's bread boxes. It is safe to say that there would be an immediate and united effort to save the waste, and despite political and economic doctrines, the effort would obtain a large degree of success. As during the war, each of us, as demand outran supply, would feel a personal responsibility to aid in conserving the supply, and our individual and united efforts would accomplish wonders.

### The Soap Box Test of the Public Mind

One may stand on a soap box at a street corner and with a few fiery and rhetorical sentences, punctuated by the brandishing of a loaf of bread made from grain grown in a few short months, incite a bread riot, but let him substitute for the loaf of bread a section of a board cut from a tree which it has taken 200 wheat harvests to grow, and he will have difficulty in drawing an audience. Such is the state of the public mind with respect to bread and boards. Perhaps one explanation is that bread riots are actualities, whereas board riots are as yet unheard of in this fair country.

### The Fatal Figure Four

All of which does not alter the situation in regard to forest waste or the needed assumption of public responsibility which it demands. It merely accentuates the seriousness of it. We are told by no less an authority than the Forest Service, that only 30 per cent of the wood in the forest gets into the form of seasoned, unplanned lumber, and that of this amount an additional 10 to 25 per cent is lost in the process of further manufacture. In other words, 4000 feet of forest growth is sacrificed to American wood-using customs and demand for every thousand feet of wood placed in the consumers' hands. We not only destroy four times what we use, but we are using what is left of our forest heritage four times faster than it is being replaced by new growth.

### The Public Has Its Faults

The fatal inevitableness of the course is apparent, but the public refuses to be concerned despite repeated warnings that four-fifths of our original forests have gone, that 60 per cent of that left is west of the great plains and that decade by decade the price of lumber is pushing upward. It persists in clinging to old demands and old customs handed down from days when forests were embarrassingly plentiful and forest waste was an economic order of the time. It adheres to a rigid position of wood particularity, regardless of its effect upon waste in the

forest, and it recedes from that position only when economic changes force it to do so.

### Watchful Waiting and Forest Waste

There are men, who, measuring the future by the past, assert that the development of better utilization of our forests is meshed in an economic gear. They maintain that when a market for material now wasted is available, this waste will be saved. They slur over the utilization phase of our forest problem with a taken-for-granted attitude that economic pressure is the only effective rectifier. They overlook the fact that this economic pressure must spring from a serious off-balance of supply and demand—the very situation we are trying to guard against.

This is a do-nothing attitude masked in affectation of economic learning. It is the quickest way of exhausting our forests, next to burning them up, and of accelerating the timber pinch. It can be justified only by admitting that our system is a one-gear machine, or that we have not the intelligence to change gears when a change is clearly necessary. It is an attitude which will never enlighten the public to the possibilities of relieving the drain upon our forests by developing a national conscience for wood economy.

### The Octopus of Forest Depletion

Anyone who has gone very deeply into the situation with respect to forest waste in this country knows that it is the he-octopus of forest depletion. Its arms reach out into every industry and its suckers permeate the whole American wood-using public. Millions upon millions of feet of fallen timber are left to rot in the woods every year. Why? It may be one of many remedial reasons. It may be because the public continues to stand, year in and year out, for railroad tariffs which permits the railroads to charge the same rate for hauling low grade lumber valued, let us say, at \$15.00 a thousand feet at the mill, as for higher grade lumber valued at \$100.00 or more a thousand feet. When it does not pay to log and manufacture lumber, industry will not do it. More economics wrapped up in a flimsy tariff sheet.

### Custom a Finicky Customer

Or, good timber will be left in the woods, burned, or degraded at the mill, or sold for fuel at the wood-using plant, because custom has so ordained. It has always been so, therefore it must be an economic rock which only the forces of dire necessity can alter. The public has been miseducated to finicky wood tastes, which often are at the root of forest waste. Old line industries have "educated their trade" and new line industries are out to "please the public," and all the time the public does not realize the folly of its way.

### The Case of Grandmother's Spools

An example will serve to illustrate: A mill in the



course of a season manufactures five million feet of birch for spool stock. Thirty per cent of the lumber proves to be so-called red-heart, but sound and perfectly suitable for spools. The spool factory refuses to accept it. The wood is off-color. Our grandmothers were educated to white wood spools and white wood spools our women folks must continue to have until there is no more white wood left. So the million feet of otherwise good spool stock goes into a burner or is sold to a pulp mill at fuel wood prices, while foresters, lumbermen, congressmen and statesmen disagree as to who will spend 50 to 100 years growing a new forest to make good the loss. Fine economics!

#### **False Gods and Lack of a National Conscience**

That example is not extreme. It is a modest conservative one. Others of similar tenor might be cited *ad infinitum*. In the aggregate, we are sacrificing one and perhaps two years' supply of wood every four years to false Gods of forest utilization. No single industry or set of individuals are to blame. The problem is a common one of research, education, and the determination to remove senseless obstacles. Forest utilization begins with the lumbermen and ends with the consumer, but back of it all there must be a public conscience against wood extravagance. If we wait for timber shortage to develop that conscience, it will be too late. The great need is now. The public must be brought to a new conception of the use of our forests. It must be enlightened as to the evil consequences of its present disregard for

forest waste. Instead of complacency and ignorance, there must be a national sentiment to husband our remaining forests and to make them go as far as possible.

#### **Removing Public Ignorance**

For years, the Forest Service has been studying forest utilization and seeking to educate the wood conversion industries to needed and possible economies. Progress has been made, but it has been slow. Within recent years, there has been a marked awakening among lumbermen and wood manufacturers to the opportunities for saving wood and money through better utilization practices. Their biggest handicap, in many cases, is lack of public understanding and cooperation, and a public failure to show any interest or responsibility for wood extravagance or forest waste. So far as the public goes, ignorance is probably at the bottom of it all. Take the case of spools. It is inconceivable that the women of this country, if they realized the waste incidental to white spool traditions, would continue to demand that their thread be wound upon white wood spools.

In many of the larger utilization problems, the industries can get just so far and no further without the public's cooperation. There is a loud call and a great opportunity for the government and the states to expand their utilization work with a more extensive, aggressive and definite program to educate the public to the situation and to make different classes of consumers see and feel their responsibilities.

## **THE RED DRAGON OF NEW JERSEY'S FORESTS**

**T**HERE are two million acres of forest land in New Jersey which, as transportation goes today, are almost within trucking distance of the greatest lumber market in the world. Sooner or later the people of the state will awaken to the economic significance of that fact, but unless they hasten their steps, the awakening may be too late. New Jersey's forests are being burned at the rate of 70,000 acres a year, all of which is tending to reduce the area of growing forests and to convert land which naturally would become a public asset of great value into a public liability of unsightly and embarrassing proportions.

#### **No Lack of Forest Land**

The state has never ranked as a great lumber producing state but this may be attributed to its size and not to its lack of forests and forest lands. Approximately forty per cent of the land area of the state today is forest land and the soils and climate of New Jersey are such that timber grows rapidly wherever it is given a chance. But more than that, these good forest growing lands are about as close to great diversified markets as it is possible for wild land to be. Lumber prices in these markets are every year more and more being set by the cost of importing lumber from the extreme south and the far west. The raiser of timber in New Jersey has no \$25 freight bill to pay on every thousand feet of lumber he manufactures, but in years to come his

selling price will be based upon these long haul costs. He will reap the advantage and his state will be enriched.

#### **Fire—The Red Dragon**

The people of New Jersey need lumber the same as the people of New York, Pennsylvania or any other state. They are today economically dependent upon the forests of the south and the far west, while at their very doorsteps they have two million acres of excellent forest growing land which with proper fire protection will largely take care of the state's future timber needs. Already the state is paying a five million dollar bill annually on lumber imported from the south and the west. This bill is increasing year by year while the area of growing timber within the state grows smaller with every fire season, for fire is the Red Dragon of New Jersey's forests. The State Department of Conservation and Development is authority for the statement that,

"Each year we cut timber worth about ten million dollars on the stump. Under present forest fire conditions this production will continually decrease toward zero and our freight bill will correspondingly increase. With fire protection we could, as we ought to, cut timber annually with a fifty million dollar market value at pre-war prices and not overcut in doing so, but do it year after year indefinitely."



### Forest Values and Public Sentiment

If the citizens of New Jersey, or any other state for that matter, could foresee the values which will attach to timber crops in future years, the whole public attitude toward forest fire and forest perpetuation would change over night. Every good citizen stands for the upbuilding of his state. He wants to see it prosper. He wants to see it developed and enriched for the benefit of his children and his children's children. He wants to see it, as a commonwealth, seize its opportunities and go forward shoulder to shoulder with other states. And, above all, he wants to see it conducted in a business-like and fore-sighted way.

### The Family Skeleton of the Commonwealth

The average citizen feels pride in the sight of richly producing farms, developed waterways, thriving industries within his state. But he never boasts of or calls attention to barren and burnt over forest lands. They are the family skeleton of the commonwealth. And yet it is within his power to clear the closet of those bones by merely demanding that the state spend enough money for fire protection to permit nature to grow timber on the lands chiefly valuable for timber production. The want of that sentiment in New Jersey is yearly adding black, barren acres to the New Jersey landscape. About one-third of the state's forest area now contains merchantable timber. The other two-thirds have been wrecked by fire.

### More Money—Less Fire

The Department of Conservation and Development has long called attention to the need of more effective fire protection. The state is spending only about \$35,000 for the purpose and while the department has rendered very distinguished service in reducing fire losses, the amount is only about one-half of the minimum required for effective fire protection. Both the legislature and the governor of the state recognize the need of more funds. A year ago, the former passed a bill, which was signed by the governor, providing for a material increase in the state's fire-fighting organization, but the appropriations committee failed to make the necessary money available.

### A Penny Wise and Pound Foolish Policy

It is mighty poor statecraft which persists in burning up the state's growing crop of timber, knowing that by so doing the people will have to haul lumber three thousand miles from the west coast to make good the loss. That soon becomes a far heavier tax upon the public and the industries of the state than a few cents an acre spent in protecting growing timber right at home. It is a policy which in order to save a few pennies today, would pauperize the state for a hundred years to come. The husbanding of its forest resources on the other hand enriches the state and renders it independent as a home-building, wood-using commonwealth. The people of New Jersey will have an opportunity to express their sentiment at the primaries this fall. Surely, they will not stand longer for the "penny wise and pound foolish" policy.

## THE EARLY USES OF THE YAUPON

By C. D. Mell

THOSE familiar with the use of the leaves of yerba mate (*Ilex paraguayensis*) will not be surprised to learn that a closely related species native to the United States possesses almost similar properties and uses. The leaves of the yaupon (*Ilex vomitoria*) were used more or less extensively as a substitute for tea in the pioneer days. While the tea prepared from this native plant rarely appeared on the table of fashionable society, the extent to which it formed a part and parcel of the daily food of the great majority of the people along the South Atlantic seaboard, seems to point to the existence of salubrious qualities in the leaves of yaupon when properly collected and prepared.

The plant yielding this once important product belongs to the holly family of plants. It is a shrub or low tree growing plentifully along the Atlantic coast from Virginia southward to Florida, and attaining its best development on the edges of sand dunes and fringing the swamps along the coast, where it is easily accessible. The leaves are quite small and dark glossy green; the flowers, which are white and conspicuous, are succeeded by numerous small bright red berries which persist on the bushes for several months.

The Indian tribes taught the early white settlers the use of the yaupon leaves for making a tea, which they called black drink, and which was said to enliven them. The white people soon became accustomed to it and many preferred it to the imported tea. A number of the early travellers and writers in America eulogized it and recommended it as a most agreeable beverage. The Creeks employed it at the opening of their solemn councils, sending regularly to the seaboard for supplies. They prepared a very strong tea and during certain periods of the year, they drank it to excess so as to cause vomiting, which they regarded necessary in order to purify their bodies.

The plant possesses emetic properties when taken in sufficient quantities, and has tonic and digestive qualities, free from the sleepless effects. Although the aroma is different from that of tea, it has stimulating properties depending upon the quantity used. According to recent chemical investigations the leaves contain caffeine which is the same active principle found in coffee. They contain also another principle which is said to act as a powerful diuretic and which is employed in nephritic diseases, diabetes, gout and smallpox.



# THE KUDZU VINE AND OTHER CLIMBERS

By Dr. R. W. Shufeldt, R. A. O. U.

Photographs by Dr. W. E. Safford, Mr. Freeman and the author



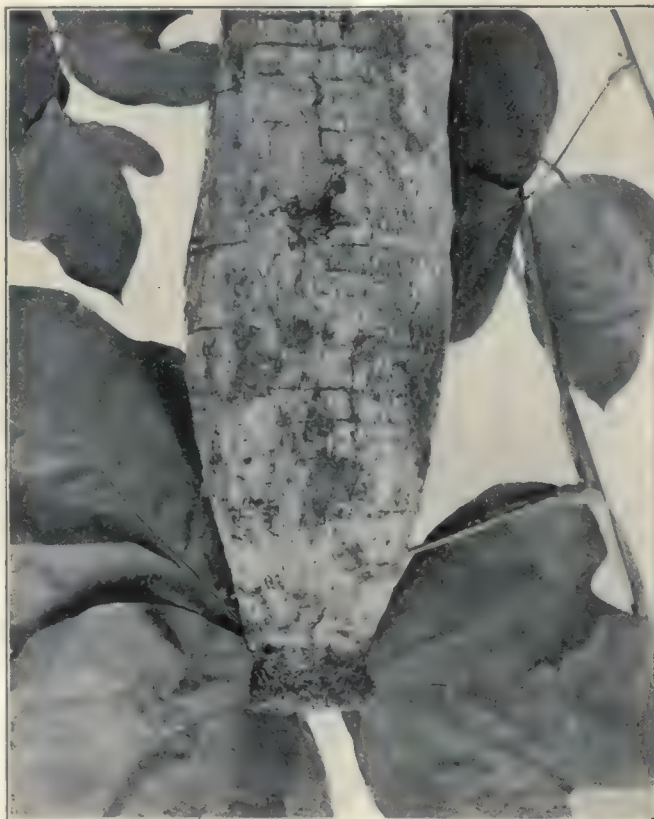
I N the flora of any country, the number of vines represented is invariably far less than that of all other kinds of plants taken together, and this is the case with respect to our own flora here in the United States. Usually, only a few vines grow in the open country—such as the low vine blackberry, the bindweed, and dodder—as their opportunities to climb are limited. Along stone walls and rail fences the case is different, and there we will meet with a greater number; for in such places poison ivy, bitter-sweet, and many others flourish in abundance. However, there is no hard and fast rule in regard to this, as we frequently meet with vines growing in the most unexpected places.

There are not a few points of interest associated with the word *vine*. It bears a close relation to the word *wine*; and the Century Dictionary has it that a vine is "a climbing plant with a woody stem, the fruit of which is known as the grape, a grape-vine; often called specifically *the vine*" \* \* \* "Any plant with a long stem that trails on the ground, or climbs and supports itself by winding round a fixed object, or by seizing any fixed thing in its tendrils or claspers; as the hop-vine; the *vines* of melons." In other words, we have wine made from the fruit of *the vine*, and through acetous fermentation of several inferior wines we obtain *vinegar*.

All through fabulous and romantic history, vines have often been introduced in one way or another—we read of immense vines that in some instances grew to astounding proportions in the course of a single night or day. Then there is the famous "Bean-stalk" that Jack climbed, in the old nursery tale, which many associate with the Kudzu vine, so often observed in southern cities and elsewhere. The latter vine is now seen growing in many places in Washington; yet but few people in that city seem to know anything at all about the plant or even its name.

A most wonderful example of the growth of the Kudzu vine is to be observed opposite the east entrance to the National Zoological Park, back of the little refreshment stand, where three plants have spread to such an extent that they have filled in the entire valley—an area of at least an acre and a quarter (Fig. 4); while in many other places in the city this luxuriant vine runs over high walls, buildings, and other structures. Again, west of my home on 18th Street, we have the boundary wall of the old Ingleside estate, and over this climbs an unusually fine plant of this species, which bears, towards early autumn, its beautiful racemes of purplish, papilionaceous flowers, ex-

hibiting at the same time bunches of hirsute pods. Not long ago I photographed specimens of this particular plant, giving the leaves, flowers and pods (Fig. 2). Many of these vines in the city do not seem to bear flowers, and strike one as consisting of a great mass of leaves and nothing more. The leafage of the vine is often so dense that the stem of the vine is quite obscured by it as it runs over tall fences, up the sides of adjoining houses and chimneys in one dense, green mass. Sometimes the Kudzu vine will be found growing among much scattered trees, at the edge of some timberland, where, too, may flourish an undergrowth of sumach, elderberry, and other scrubs; and, if not obstructed in any direction, it is a sight worth seeing to observe its extraordinary spreading growth. In an incredibly short time it spreads a



ROOT OF THE KUDZU VINE

Fig. 1.—This large starchy root of the Kudzu Vine (*Pueraria thunbergii*) is an article of much economic importance in China and Japan.

dense, leafy mat of several layers of leaves over all the shrubbery and open spaces, running up upon trees that have a height of 30 or 40 feet, and completely putting them out of sight. One may see an excellent example of this on the farther side of the long, straight road that bounds the National Zoological Park on its east side, in Washington. (Fig. 6.)

Dr. W. E. Safford, Economic Botanist of the Bureau of Plant Industry, United States Department of Agriculture, tells me that the botanical name of the Kudzu





FLOWERS OF KUDZU VINE

Fig. 2—These flowers bear a general resemblance to those of the locust tree. They are purplish in color. Note the seed pods and leaves. (Reduced one-half.)

vine is *Pueraria thunbergii*; and in his letter of September 1, 1920, he says that "It is of Oriental origin and its large, farinaceous roots are used by the Chinese and Japanese as a source of a starch or arrow-root of excellent quality, much used by invalids and for making sweetmeats. Although blooming freely in this country, it seldom forms perfect seeds or very large roots. The plant grows with such rapidity that it soon covers windmill towers, and has by some jocose botanists been identified as the magic beanstalk by means of which Jack climbed to the sky.

"I am sending you, under separate cover, a photograph of a root from China, which is at your disposition, and I should be very glad to receive a copy of your own photograph."

The elegant photograph of the root of the Kudzu vine sent me by Doctor Safford is here reproduced in Figure 1; it was taken by him and Freeman on November 7, 1919, at the United States Botanic Garden, the specimen being, as he says, a "large root from China." Later I sent Doctor Safford the photograph he desired, a duplicate of which is here reproduced in Figure 2, and he wrote me on the 26th of September, 1921, thanking me for my "beautiful picture of *Pueraria thunbergii*, which is absolutely perfect. I hope you will publish it and call attention to the economic value of

its large starchy roots. Dr. Tanaka tells me that the starch derived from it is of great importance in Japan and China."

I am not informed as to whether the root of the Kudzu vine has been used for any purpose in this country; if not, the subject is worthy of investigation.

Taking the country at large, there is a very long list of vines in our flora, and not a few of them have interesting life-histories. We have also many introduced vines, while the list of cultivated species is surely a long one.

Vines in nature fulfill many purposes in addition to the ends met by wild plants in general, while we cultivate others to meet various ends—economic, æsthetic, practical, and otherwise. Some of the species are small, delicate in structure, with small flowers; and, unless growing in masses, they might never attract the attention of the casual Rambler in woods and fields, while others may grow to become giants of their kind. They may have rough, bark-covered trunks as big as an average tree; while, spreading far and wide, they dominate all and cover all that they, in time, overspread. Some of this class may possess wonderful flowers in the season of their florescence; and I remember a pas-



TRUMPET FLOWERS

Fig. 3—Trumpet-creeper is another name for this well-known climber, a conspicuous vine of the southern states, where it blooms in August and September. Photograph by the author.

sion-flower vine that grew on our place in Havana, Cuba, that held the attention of nearly every one who passed that way. It grew all over a tall fence between our home and that of our next door neighbor, running up so high as to cover the side of a big building nearby, and actually putting out of sight much else besides. Its flowers, as big as those of our tulip-tree, were wonderful to behold, the parts of one of them being likened, by people of that country, to three nails, a cross, and so on. But rich and handsome as passion-flowers are,



they are West Antillean and not found in our flora; so they do not appeal to us in the way that some of our own vines do—as, for instance, that grand aerial climber, the trumpet-vine or trumpet-creeper of the South (Fig. 3). This splendid vine has long been introduced into the North, where it is much in demand to run up over porches, arbor-screens, and similar structures of the home. The flowers are of brilliant orange and scarlet, so that a bunch of them may be recognized at quite a distance, especially when the bunches, as is usually the case, hang in front of the dark leaves of the vine, which latter are pointed, toothed, and of ovate outline. As

their cars. Dogwood and many other lovely wild flowers suffer in a similar way.

There is a great number of fairly well-known vines growing wild in the eastern part of this country besides the few already mentioned: among them we may name the poison ivy, the Virginia creeper, the wild morning glory or bindweed, the curious leather-vine, the deadly nightshade, dodder, clematis, honeysuckle, and others. Then, under cultivation we find the hop-vine, clematis, coral honeysuckle, various peas and beans, moon-vine, rambling roses, gourds of different species and many garden vines, as pumpkin, squash and cucumber. In-



WHAT A FEW KUDZU VINES CAN ACCOMPLISH

Fig. 4—Three Kudzu vines covering an area of about an acre and a quarter. This vine is about three years old, and started from only three roots planted in the rear of the building. Note how it has run over the latter and over the trees to the left in the picture. Photograph by the author.

will be noted from the figure, the flowers are funnel-shaped, reminding one of little red trumpets—hence their name. The aerial rootlets by means of which this vine climbs, hold on with great tenacity to whatever they take to; while the flowers, when fully open, readily fall off their stems, rendering them unsatisfactory to carry home and use for photographic purposes. (Fig. 3.) As a rule, automobilists are ignorant of this fact, and the consequence is that many a bunch of trumpet flowers are to be seen lying by the wayside in midsummer, having been picked by these people for no other reason than temporary gratification, and to attract the attention of other automobilists as they shoot past each other in

deed, taking the combined list, the species would run up into the hundreds. Not a few of those now regularly cultivated are also found growing wild, as Virginia creeper and trumpet-vine; while, as we may readily surmise, all of the cultivated species have been derived from those still found wild in the flora of one country or another—either here or in the Old World.

As vines and creepers were bred from wild ones and passed through various stages of cultivation, such as modification of form and flower and other matters, the cultivator ever had it in mind to improve the plant to meet the end he had in view. For instance, the hop-vine was cultivated in such a way as to yield more and





*Upper*—THREE YEARS' GROWTH FROM THREE ROOTS OF THE KUDZU VINE

Fig. 5—This is an extraordinary example, spreading over the great hollow to the eastward of the refreshment booth just outside the "Zoo" gate (Washington, D. C.). Photograph by the author, summer of 1920.

*Lower*—A PART OF A KUDZU VINE OVERLYING UNDERGROWTH AND TREES

Fig. 6—About 200 feet of a vine growing on the farther side of the automobile road bounding the National Zoological Park at Washington, D. C., on the east. Note how it has run over all the shrubbery and the tall trees to the right.





LEAVES OF THE WILD GRAPE-VINE

Fig. 7—All the parts here shown are from the same vine, and the variations are apparent. Note the black aphids on the shoot partly hidden by the incised leaf to the left. Collected and photographed by the author. Much reduced.

better hops; the garden vines, as peas, beans and many others, to produce vegetables of greater size and richer in food qualities; for shade, bigger leaves, and power to extend over greater surfaces; for beautiful and curious flowers; to enhance the characters for medicinal products, to insure greater quantities and strength; for products used in the arts and industries, various improvements in them, and so on.

There are various means inherent in any particular vine or climber that ensures its being able to climb or to creep. This may be done by sheer extension of growth, the plant simply rambling over anything and everything that chances to be in its way as it grows. In others, as in tear-thumb, the four-angled, reclining stems beset with fine, sharp prickles (at the angles only), admits of its stems hanging onto, more or less tenaciously, any ordinary thing it comes in contact with as it extends through growth.

Some plants, as in the strawberry group, possess runners from which other plants are produced; but these runners must not be confused with such structures as allow other plants to creep or climb; the function in either case is entirely different.

It is a well-known fact that many plants climb by tendrils—curious little twisted affairs developed on the stems and on other parts of the plant. These vary greatly in form and structure. Some are extremely delicate and weak; others are wiry and very strong, as in the grape-vine series; some develop little terminal suckers, which, sticking onto anything in the vine's line of growth, hold on with remarkable tenacity.

In plants of the cow-vetch order, the paired tendrils are found at the terminus of any of the leaf-stalks; they are fine and hair-like, but allow of the plant being a most successful climber. Our common ground-nut is an excellent example of a species that climbs to a height of several feet with no developed structure to assist it. Wild beans and hog peanuts are in the same case and we find an equally good example in our bitter-sweet, a climbing vine of great beauty, often seen running over stone walls or old wooden rail fences. In the woods it may sometimes take to a tree, climbing to a height of some fifteen or twenty feet or more. In these efforts its stem becomes much twisted, causing its exquisite fruit or flowers to assume regular positions with respect to the stem—a fact still more apparent in the pale green ovate leaves which come out alternately or in ranks, as it were, as the vine twists about its support.

The peculiarities of wild grape vines have already been alluded to elsewhere, while an additional character will be mentioned here, one that must not be overlooked,



BUNCH OF UNRIPE WILD GRAPES

Fig. 8—This specimen is from a vine growing in the woods near Washington, D. C. Collected and photographed by the author. Slightly reduced.



namely the great variations to be seen in the outline of the leaves found upon the same vine at the same time; these are well shown in Figure 7. Some grape-vines possess truly woody tendrils that are, when fully matured, as strong as medium heavy wire, and twist about what they take hold of in the closest and most efficient manner. Other vines possess similar structures.

Our Virginia creeper, already mentioned, is a vine that possesses not only disc-bearing tendrils but aerial rootlets as well, which doubles its means of climbing over extensive surfaces. One of these vines now flourishing on the south pebble-dashed wall of my home here in Washington has almost entirely covered that part of the house, which is three stories high; it is still growing,



A JAPANESE MORNING GLORY OF GREAT BEAUTY

Fig. 9—The flowers of this vine are of a deep purple, emarginated with white. Photograph natural size, by the author. Note the curious little beetle on the central leaf.





THE WILD HONEYSUCKLE

Fig. 10—One of the most delicate and fragrant of all our wild flowers. It often grows in great masses, its yellow-veined leaves being wonderfully striking. Photograph by the author.

and bids fair to run up on the roof and cover the chimneys soon. When in flower, or when bearing its lovely bunches of dark purple berries upon scarlet stems in the autumn, there being hundreds of them, and with its green or scarlet leaves, depending upon the time of the year, it is truly a beautiful sight. Our English starlings are extremely fond of the berries, and as many as a dozen of these birds sometimes flock to this big climber to feed upon them.

Plants of the moss-pink and trailing arbutus order are great favorites; they are mere creepers—crawlers, really—that possess no claim entitling them to rank among the true vines or climbers.

Every lover of flowers knows the wonderfully attractive clematis, referred to by Schuyler Mathews as a "most beautiful trailing vine, commonly found draped over the bushes in copses and by moist roadsides. The leaves are dark green, veiny, with three coarsely toothed leaflets; the flat clusters of small flowers with four greenish white sepals and no petals, polygamously staminate and pistillate on different plants; cross-fertilized by bees." Further along he adds: "In October the flowers

are succeeded by the gray plumy clusters of withered styles (still adherent to the seed-vessels), which appear under the glass like many tiny twisted tails. The plants presenting this hoary appearance gave rise to the popular name Old Man's Beard. The vine supports itself by a twist in the leaf-stem, the latter revolving a number of times in the course of growth." This plant may be seen in many of our southern cities, a single specimen growing to a length of a dozen feet or more. Another name for the clematis is Virgin's Bower, and we also have a species known as the Purple Clematis.

Most of us are familiar with the little trailing vine of the woods known as the partridge-berry or twinberry. Its dark green, evergreen leaves, veined with greenish white, are small and oval in shape. In the autumn its bright red or scarlet berries, growing in pairs, attract the attention of any one passing the place where it grows which is often in the deepest shadows of the forest, and this renders them all the more conspicuous.

Two more familiar plants are seen in the trailing bindweed and the common dodder, the first-named being related to that grand group of wonderful cultivated



FLOWERS AND LEAVES OF THE WILD YAM

Fig. 11—The roots of this well-known vine are used in pharmacy, and the plant is readily recognized by its rather pale and very beautiful heart-shaped leaves, which are conspicuously veined. Photograph by the author.



climbers well known as morning glories, of which is here presented a beautiful photograph of a species introduced from Japan (Fig. 9). There is an almost endless variety to the flowers of this familiar climber, and they run all the way from pure white to a rich, deep purple, or some of the crimsons and deep blues. The flowers of the wild trailing bindweed, however, are pure white, though they may be pink-tinged sometimes. In open meadows, over old fences along the roadside, and sometimes in the woods, this vine climbs over everything in its way; and when it bears many flowers, it is by no means an unattractive plant. There are several species of it in the family to which it belongs, as the Upright Bindweed, the Hedge Bindweed, the White, the Trailing, the Small, and perhaps others.

Mathews speaks of the common dodder as "a miserable parasite often troublesome in gardens, but found in low, damp, shady situations. It climbs high upon other



LEAVES AND SEEDS OF THE WILD YAM

Fig. 12—These seed pods, of a very pale tan color, are notably conspicuous objects in the woods where the vine grows. Photograph by the author, reduced.



SEED PODS OF THE WILD YAM

Fig. 13—Note that the tendrils of the plant are not very abundant, nor of marked clinging capacity. Often the small, greenish-yellow flowers are present with the 3-valved seed capsules, as is the case in the cut.

plants by twining closely about their stalks and exhausting their juices through a thousand tiny suckers. Its thread-like, twisting stem varies in color from dull yellow to dull orange, it is crowded with bunches of tiny dull white bell-shaped flowers having five lobes. The calyx is greenish white. All the dodders start at first from the ground, but finally securing a convenient plant upon which to climb, the root in the earth dies and they become parasite."

A few years ago I ran across a mass of these plants along the old Georgetown Canal, at Washington. None of them had any hold upon the ground, while their murderous, twisting stems were everywhere twined about the upright stalks of a big group of artichokes, then in full flower. Some of these latter already exhibited the effects of the juice-sucking plants that were clinging to them, and all were probably doomed to perish as vic-



tims of this thief of the Convolvulus family, which everybody abhors, although the plant is doing nothing more than it was created to do, and what its ancestors had done before it, long ages ago.

Many elegant vines are known as gourds, and they constitute a separate family, our common Climbing Wild Cucumber being an American example of them. It possesses fine, curling tendrils and leaves that remind one of those of the ivy. The ivies, by the way, are still other vines with most interesting histories; and the facts that make up their natural history and characters have been woven into prose and poetry since the days of yore.

We have:

"Oh, a dainty plant is the ivy green  
That creepeth o'er the ruins old!  
Of right choice food are his meals I ween,  
In his cell so lone and cold."

and the rest; and it was Gray who left the lines:

"From yonder ivy-mantled tower  
The moping Owl doth to the Moon complain."

We have a great many more vines that might be described or at least referred to here; but their histories must be reserved for some other time.

## FOREST FIRES WORST IN SIX YEARS

**A**LTHOUGH the forest fire situation in the Northern Rocky Mountains and North Pacific Coast region is far worse than it has been for six years, there is little general appreciation of the fact throughout the country, reports the National Lumber Manufacturers' Association. So many hundreds of fires have there been and so many brief reports of them that they have come to be accepted as part of the routine of daily life, just as bloody battles were during the World War. It requires a survey of the voluminous reports collected by the Association at its offices at Washington to get an adequate impression of the damage that has been done and the extent of the menace that existed, and to some degree, still exists. It is calculated that the losses have aggregated about \$5,000,000.

Possibly the greatest actual damage to virgin standing timber has been outside the boundaries of the United States and on the Canadian side, in the Pacific Coast region. One fire in British Columbia destroyed sixty million feet of the finest timber. So numerous have been the fires in that province that the Lieutenant-Governor of British Columbia ordered the cessation of logging operations on Vancouver Island in order to release the employees for fire-fighting.

While there has been no such single case of damage on the American side, the fires have been even more numerous and have covered a larger area, including much of the timber region of eastern and western Washington, Oregon, Idaho and Montana. One hundred and fifty thousand acres have been burned over in Washington, and the property loss in Idaho is placed at \$1,500,000. Some virgin forest and tens of thousands of acres of cut-over lands have been burned and large quantities of second-growth timber have been destroyed, as well as great quantities of logs, many camps and much equipment. While cut-over fire damage does not measure into relatively large sums in terms of present value, it must be remembered that destructive fires on the cut-over lands mean loss of mature timber for the next generation and, sometimes, destruction of the soil. One calculation has it that actual or potential timber sufficient for 300,000 homes has been burned in the last ninety days.

The season has been exceptionally dry throughout the Pacific Northwest, with the result that fires are very easily started. In one instance a spark from a donkey engine used in logging operations, started a fire which covered 20,000 acres of land, destroyed 15,000,000 feet of saw timber, four logging camps, fifteen donkey engines, one locomotive, 35 flat cars, 20 houses and three automobiles. Occasional small showers have sometimes aggravated the situation because of the accompanying lightning and resulting new fires.

From almost every small section of the Northwestern timber belt come tales of fire after fire and endless accounts of the struggles of forest rangers and patrols, loggers, sawmill employes and citizens in general, exerting themselves to exhaustion to check the flames. Here are a few recent reports taken at random:

At Newport, Washington, there were two separate fires. At Potlatch, Idaho, a great fire along Floodwood Creek spread for many days and was fought by 500 men. One phase of this and other battles with the fires in northern Idaho was that the fire-fighters went on strike. Two fires east of St. Maries in Idaho, burned over 5000 acres, menaced great white pine holdings and required the heroic efforts of 300 fire-fighters to check it.

In the Blue River country of the Cascades in Oregon, a fire threatened some of the finest timber in that section and was only checked after a desperate effort by a large number of men. There were numerous fires in various other parts of Oregon; one of them for a time threatening the rich, agricultural Hood River Valley. Many fires were reported in Columbia and Tillamook counties.

In western Cowlitz County, Washington, the Eastern and Western Lumber Company had to suspend all operations and concentrate on fire fighting for many days.

A fire in the Cascade Mountains, believed to have been started by berry pickers, endangered the Seattle City light and power lines. A bridge was destroyed on the Eatonville Branch of the Chicago, Milwaukee and St. Paul Railway. There were many fires in the Snoqualmie National Forest, but the worst of them was brought under control after it had burned over 300 acres. A fire west of Darrington blackened 25,000 acres.



The fire in the Marble Creek district in Idaho, spread to 15,000 acres before it was checked. At Marcus, Washington, two days of continuous fire-fighting exhausted the fighters and they had to give up the struggle.

The timber on the Bull Run water reserve and Portland, Oregon, water supply system, was only checked after 160 men had labored to the point of exhaustion. There was no rainfall in the Portland district for a whole month and very little rain in the preceding month.

The United States War Department came to the rescue in Oregon by detailing a number of army flyers to patrol the forests and watch the fires.

Fires in the Chelan National Forest on the east side of the Cascades in Washington inflicted extensive damage.

Literally hundreds of similar reports might be quoted from the Northwest. While at present no serious fires are reported in the Lake states or in the Northeast, fires earlier in the season destroyed one million dollars worth of timber in Pennsylvania alone.

When the great number of different fires is considered it is not surprising that statistics show that the area of forest land annually burned over is about twice that cleared by the ax for lumber and other purposes.

United States foresters, lumbermen and timber owners agree that the present costly experiences demonstrate that the primary step in solving the problem of the supply of forest products in the future, is adequate protection of the remaining stands of virgin timber and the cut-over lands on which nature is attending to reforesting. It is hoped by all of them that the disasters of this season will lead to early action by Congress and state legislatures, looking to vastly improved provisions and arrangements for preventing and suppressing forest fires. It is pointed out that there is small chance for natural reforesting to succeed and no encouragement for afforestation when the probabilities are that fires will sooner or later undo the work of both nature and man.

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*"When winds go organing through the pines,  
On hill and headland, darkly gleaming,  
Meseems I hear sonorous lines  
Of Iliads that the woods are dreaming."  
—Madison Carwein.*

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DO not rob or mar a tree unless you really need what it has to give you. Let it stand and grow in virgin majesty, ungirdled and unscarred, while the trunk becomes a firm pillar of the forest temple and the branches spread abroad a refuge of bright green leaves for the birds of the air—Henry Van Dyke.

## A HOT TIP

By John Lewis

In Northern Minnesota, just a month before the date  
When the Hohenzollern Kaiser got the celebrated 'gate'—  
While each railway  
Was being cared for tenderly by McAdoo and Hines  
Some engines using red-hot coal dropped sparks along the lines,  
In their frail way.

Said Quincy Adams Jefferson, a settler on the land:  
"To burn a bit of brush round here would help to beat the band  
With my clearing."  
And likewise on that selfsame day a farmer, Angvik Mork,  
Said: "Tenk, by yee, a leetle fire vill save me plenty vork,"  
(Never fearing);

And Victor Hokkonen and Como Muzzio  
And Heinie Pflugendorfer got the notion,  
And Mike Podopoulos and Vladimir Czecho  
And Sandy Inverary and Joe Rochon.

Thus, scattered all about, it shortly came to pass  
That scores of hand-made fires started glowing;  
And doubtless sev'ral more were kindled in the grass  
By locomotives careless in their going.

It was, of course, unfortunate, but rain had not been seen  
Around these parts for seven weeks; and that could only mean  
They lit tinder.  
So, when a gale roared from the West, the obvious befell,  
For Northern Minnesita looked a proper piece of—well,  
Call it cinder.

And nobody will ever know how many lives were cost—  
Since flu attacked the homeless ones, that reckoning is lost.  
Circumspectly,  
I'll place the dead by smoke and flame at nigh four hundred souls,  
While full two thousand more were left in casualty roles.  
(Please correct me).

The lawyers had a hunch. They played it pretty fast  
And, swiftly signing settlers up for vengeance,  
Made Government the goat and lashed it to the mast  
For operating spark-ejecting engines.

So Government must hand, in squaring for its crime,  
Some twenty-seven millions to the claimants,  
(Whose lawyers get one-fifth, to compensate for time),....  
Now, none will grudge his taxes for the payments,

But—lest you think I only plead 'gainst Federal control  
Of railroads, which has eased us of this tidy little roll—  
My contention  
Is that countless folks have land to clear, so there'll be fires again  
Unless the Forest Service gets the necessary yen  
For prevention;

And twenty-seven millions would have worked for many years  
Protecting life and property and saving bitter tears  
Through the nation.  
So any legislature (in any timbered state)  
Which cramps the style of 'Forestry' deserves, for final fate,  
Just cremation!



# THE LAND OF THE CHEROKEES

By Ovid M. Butler

Forester, American Forestry Association

**A**N expedition, unique in the history of American forestry, left Atlanta, Georgia, on the morning of May 29, 1922, and moved swiftly northward in the direction of the Blue Ridge Mountains. It was a caravan, not of canvas-covered, mule-drawn wagons with bearded drivers, but of glistening, high-powered automobiles bearing a party of more than half a hundred white collared men, bent upon seeing with their own eyes what manner of country Ernest Neal had in mind when he wrote:

"Have you heard of the land of the Cherokees,  
With its wonderful streams and beautiful trees?  
Of its flowers abloom and the wild perfume,  
That floats like a bloom on the evening breeze?"

The expedition had been organized by the Atlanta Constitution, one of the leading Southern newspapers, with the object of unfolding the vast possibilities of the Cherokee and Natchala National Forests in north Georgia as summer recreational areas for the people of Georgia and the nation. Among the party were Congressman Gordon Lee and Thomas Bell, Thos. H. McDonald, Chief of the United States Bureau of Public Roads, James A. Holloman, Washington correspondent of the Constitution, Col. F. C. Boggs and Col. G. C. Howell, of the War Department, F. W. Reed, District Forester, United States Forest Service, W. R. Neal, Georgia State Highway Engineer, and other representatives of federal and state departments. In addition, there were representatives of the public, a number of foresters who knew the country, a car of boy scouts, a radio unit, moving picture operators and a fully equipped repair truck.

Leaving Atlanta at seven o'clock in the morning, under clear skies and on dry roads, the party was soon in the

beautiful historical village of Roswell, where it made a brief stop to visit the charming old colonial home of Martha Bullock, set upon a hill among the cedars and the crowding hardwoods. It was here that the mother of former President Roosevelt was born. Continuing northward, the expedition sped on through rolling country, the road flanked by cotton fields, some long ago abandoned and now covered by dense young forests of pine.

Through the villages and the countryside and into the log cabins of the mountaineers for back in the hills, the news of the coming of the party, which would "tell the world" about the beauty and possibilities of the forests of north Georgia, seemed to have swept in advance. At every town and village the populace was assembled on the main squares. Schools were adjourned and healthy, bright-eyed children, intense expectation written on their tanned faces, hung over the fences along the road and waved their greetings; or gathered at the town square with flags and sang "America."

It was necessary to stop at all these villages to partake of the receptions extended. There were brief speeches of welcome and refreshments were invariably served. At Cummings, long tables covered with snow-white table cloths, had been set under the trees of the Court House yard. These the women of the town had bountifully loaded with ice-cream, lemonade and a variety of delicious cakes which threatened for a time seriously to delay the expedition. At the home of a Southern planter, whose acres stretched for miles in every direction, the party was stopped and served buttermilk and ginger bread while a band played behind the tall columns of his spacious



EVENING OF THE FIRST DAY BROUGHT THE FOREST TRAVELERS THROUGH A COUNTRY RICH IN BEAUTY, INTO THE SHADOW OF YONAH MOUNTAIN



porch. At the little town of Cleveland, the exploring tourists were ushered into the drug store and billiard hall where a spread of soda pop, peanuts, cigars and bananas awaited them.

Such was the nature of the hospitality accorded the party as it moved up through the foothills toward the undulating skyline of the Blue Ridge, bathed in a soft haze of restful colors. By evening of the first day, the forest travelers drew up in the shadow of Yonah Mountain, the trysting place of the beautiful Indian maid, Nacoochee, and young Laceola, son of a hostile chieftain. The good roads of the lower foothills and the stretches of rolling and terraced fields had been left behind. Instead, the route more and more wound in and out, up and down, across bridgeless creeks and over ungraded and often washed out roads, into the steep and wooded hills of the Cherokees. But the sky was clear and the increasing jolts and discomforts of the road were absorbed by the beauty and restfulness of a perfect evening amid mountains which seemed the untarnished heritage of gentle spirits of ages long ago before there were noisy, crowded cities filled with greed, hypocrisy, heart-aches and jaded souls.

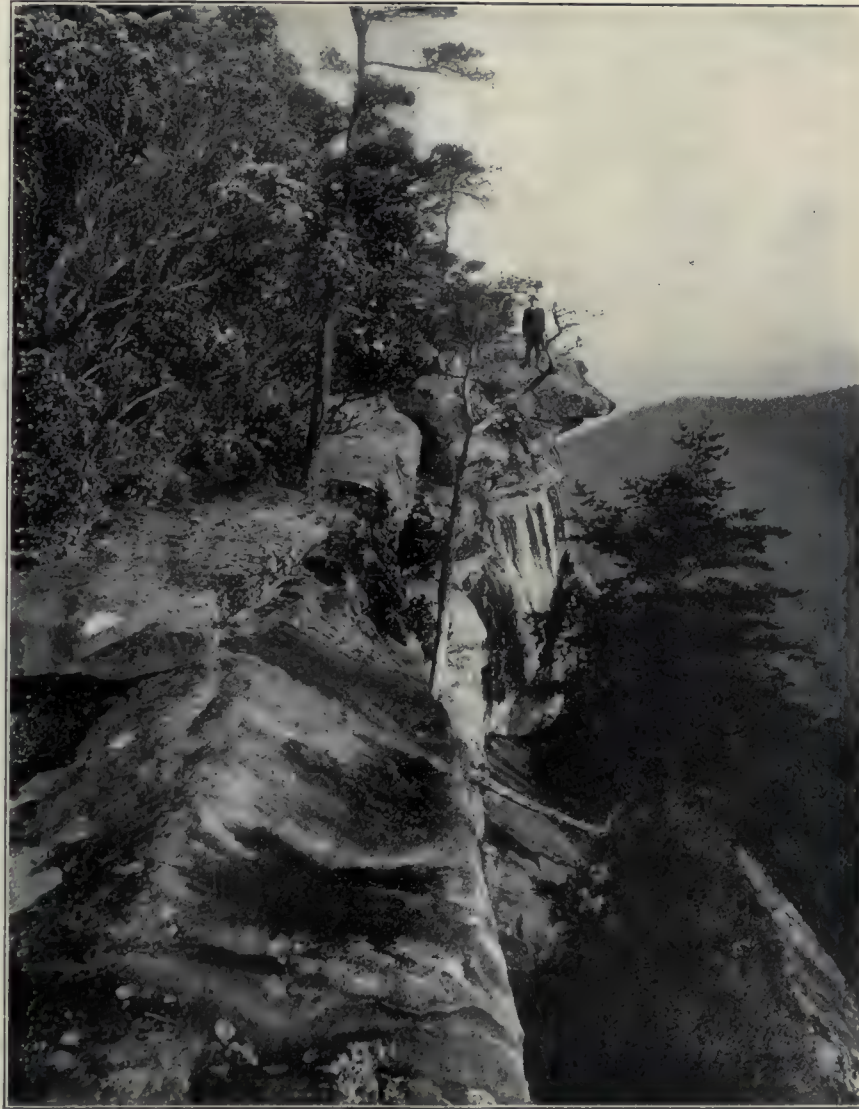
After spending the night in Nachoochee Valley, just outside the purchase area of the Cherokee National Forest, the expedition swung eastward, crossing the beautiful Chattahoochee River just above Tullulah Falls. It then turned northward and began the ascent of the Tallulah mountains. The weather was still clear and although the road was very rough with many hairpin curves and hazardous pitches, progress was seriously impeded at but one point where several machines balked on swimming a swift running mountain stream. All

along the way, young forests crowded the road, seemingly cutting it off here and turning it in there, much like a crowd of boys driving a skittish calf. Blooming laurel and rhododendron brightened the dense shade of the hardwoods while in the valleys and ravines where the mountaineers have built their log cabins and cleared small patches of ground, thin columns of blue smoke drifting lazily upward, stood out against the green mountain sides.

As darkness fell on the evening of this second day,

the caravan of automobiles, their radiators steaming hot, crested the divide and stopped for the night at the hamlet and summer resort of Highlands, North Carolina, almost 4,000 feet above the sea. Coming up the mountain, every turn of the road around a projecting shoulder threw into relief a mountain view of impressive beauty and the spell of the Blue Ridge was therefore aglow in the breasts of the travelers as they retired for the night after a supper of fried chicken and hot biscuits at the village inn.

But on the following morning the skies were dark with low hanging clouds and a steady rain was falling. The day's plan was to go to Franklin the headquarters of the Natahala Na-



THIS POINT ON YONAH MOUNTAIN MIGHT WELL HAVE BEEN THE TRYSTING PLACE OF THE INDIAN MAID, NACOOCHIE, AND HER LOVER, LACEOLA

tional Forest. The first lap was one of eighteen miles down the mountain to Dillard. Those eighteen miles proved almost the undoing of the expedition. The road at best is a bad one, but soaked with rain, it was almost impassable. First one car and then another settled in the yellow mud until its body rested upon the ground, defying the efforts of the car in front to pull it out or of the one behind to push it through. A mountaineer with a team of diminutive mules, who chanced to overtake the caravan saved the day. Seven hours were re-



quired to cover the eighteen miles to Dillard and it was a wet, mud covered and starving band which sought food at the country store there at four o'clock in the afternoon.

Before nightfall seven more miles were made and the night was spent at Clayton. Rain had fallen throughout the day. Stories of impassable roads in the direction of Franklin necessitated the elimination of that part of the tour, so on the following morning, with the mountains still being drenched with rain, the expedition turned westward and cruised slowly and cautiously along the rough and watery road which coiled up Tullulah river, over the mountain and down Hightower Creek, whose waters flow into the Mississippi river, to the beautiful little mountain valley and settlement of Hiawassee. Then onward through the rain, the machines camouflaged with yellow mud and resembling huge beetles emerging

the demobilization of the party. A small party attempted a side trip into the Blood Mountain country but the remainder of the expedition still harassed by rain and mud and swollen streams, filtered out over the Blue Ridge divide through Tesnatee Gap and thence down through the foothills and back to Atlanta.

The trip out through Tesnatee Gap, however, revealed some of the most attractive mountain country encountered during the tour—a country cut by many ravines, heavily wooded with a virgin forest and watered by innumerable mountain streams with frequent waterfalls. The road was arched with the branches of great hardwoods and its winding in and out among their trunks seemed to breathe the spirit of an old Cherokee trail.

Despite the fact that the full beauty and charm of



DIGGING OUT WAS A COMMON EXPERIENCE ON THESE FOREST ROADS THROUGH THE BLUE RIDGE MOUNTAINS OF GEORGIA AFTER THE PARTY ENCOUNTERED THE HEAVY RAINS

from a cataclysm, chugged and strained and bumped their way up another mountain road, through Brasstown Gap and into another charming valled which the waters flowing down from Brasstown mountain, lost now in low-hung, drifting clouds, seemed to have fashioned out as a special haven of rest and peace for men sick of the maddening crowds.

Passing through a low gap to the west, an hour's ride down Butternut Creek brought the expedition to the town of Blairsville, set in a mountain valley no less enchanting than those which the party had regretfully left behind. Except for rare moments when the sun sought to break through the low clouds, a fine rain had fallen throughout the day and had made the proposed trip to the top of Blood Mountain out of the question. Consequently the next day, with rain still falling, witnessed

this section of the Blue Ridge mountains could not be realized because of unfavorable weather, the members of the expedition were without exception, won over to it heart and soul. For the land of the Cherokees is a land of gentle mountains, softened by an almost continuous cover of forest growth. It abounds in mountain streams, inviting camp sites, rest inspiring little valleys. It lacks the harsh and over-powering ruggedness which so often characterizes the Rocky Mountains and inspires in many a feeling of unfriendliness. It is a land sparsely peopled by a kindly and hospitable people who live a simple life out-of-doors, and whose blood, it is said, still flows one hundred per cent Anglo-Saxon. Its possibilities as a summer playground for the south and the east are unlimited and the value of its potential and applied water power will run into many figures.



And first and last, it is a forest country. A relatively small portion of its total land area will ever be devoted to agriculture. The remainder is chiefly valuable for forests, the natural richness and variety of which stand as the source of all its charm and wealth. The mountains and valleys are densely wooded with a luxuriant growth of hardwoods, interspersed with the sombre green of pine, spruce and hemlock. Almost every species of forest tree native to the eastern United States seems to be striving to claim these mountains for itself. Nature is enacting here a warfare among the trees not unlike that of the Indian tribes of years ago. Trailing the Appalachian Mountains southward from Canada, the spruce is making its southern stand on the highest mountains of the Blue Ridge while on the slopes and in the coves the beech, birch, sugar maple, hemlock and white pine of the northern forests are battling for possession with the southern horde of hardwoods, including the oaks, poplars, hickories, gums, maples and magnolias.

But luxuriant as is the forest growth, these forests are not in the best of condition because so much of the region has been violently lumbered and burned by recurrent fires. The area of original virgin forests remaining is small and while the cut-over lands today are dense and green with young timber, much of it is being reclaimed by inferior species. But some of these species, while called inferior at the present time, may in years to come acquire, like the once despised gum, high commercial value. Nevertheless this second growth timber and particularly the forest growing power of this mountain soil, represent a great potential wealth for the region. All that seems necessary to keep these mountains dense with timber is fire protection, regulation of grazing after cutting and an ever-conscious appreciation of the fact that the forest growth is the source from which all its wonderful possibilities take life and permanence.

For none can deny that the secret of the bounty and beauty of this land, rich in Cherokee lore, is its forests.

With them gone, its beauty and charm will be gone. Its recreational possibilities will vanish like sunshine before the storm. Its waterpower will have been scuttled and its soil will erode and wash until it will become a

no man's land of gullied hills and flood infested valleys. Today, it is a remote country abounding in nature's riches and laden with man's redeemable possibilities. Almost in the center of the greatest civilization in the world and surrounded by millions of people, this land of the Cherokees, so serenely pleasing, so full of the things that are clean and big and inspiring in life, is for all practical purposes, in another world.

It needs the magic touch of good roads to lift the curtain and reveal the splendor and beauty of its proximity. It needs a conscious awakening to the value of its forest-growing power and the meaning of timbered mountainsides and wooded coves in the building of promised lands. As a scenic area for automobile touring, it would, with good roads, be unsurpassable but back of its rec-



A STRETCH OF GOOD MOUNTAIN ROAD BUILT BY THE GOVERNMENT. NATHALA NATIONAL FOREST

creational, water-power and agricultural opportunities, stand its forests, the source and shelter of all and a wealth producing opportunity unexcelled by all others combined. The land of the Cherokees needs a vision. It needs to have ever before it the vision of a country, moulded in God's crucible as it has been moulded, but with well cared for and productive forests; happy and thriving communities supported by the wood using trades; dotting farms and orchards resplendant with prosperity because of the markets and employment furnished by the forest industries; developed water power operating its wood using factories and lighting its mountain homes; telephones ringing in the mountain cabins; hard surfaced roads built with the aid of forest revenue; automobiles bringing the message of common progress and prosperity from north and south, east and west; and finally modern schools where the unusual intelligence of these mountain children can be developed to the fullest.

**MAN-CAUSED FOREST FIRES ARE PREVENTABLE--**

**DO YOUR PART**



# THE BEECHES

By Joseph S. Illick

**T**HERE are only five different kinds of beech in the world. Three of them are native to Asia, one to Europe, and one to North America. They belong to the beech family, which also includes the Chestnuts, the Oaks, and a few other tree groups.

The beech family contains some of the most important timber trees of North America and has representatives in nearly all parts of the world. About 600 different kinds of trees and shrubs belong to it. Of this large number 60 are native to North America and usually are classified in the following five groups:

COMMON NAME	SCIENTIFIC NAME
1. The Beeches	Fagus.
2. The Chestnuts.	Castanea.
3. The Oaks	Quercus.
4. The Tan-bark Oaks.	Pasania.
5. The Western Chinquapins.	Castanopsis.

The distribution of the Beeches is restricted to the

Northern Hemisphere, where they form some of the most attractive and valuable natural and cultural forests known to man. Only two of the five species found in the world are of commercial importance. One of these is the European Beech. It is one of the most important forest trees of continental Europe. Its scientific name is *Fagus sylvatica*.

It is rather widely distributed in Europe. Pure stands of it are common in Belgium, Denmark, Germany, and parts of Switzerland. It is also found in northern France, where thousands of acres were destroyed by the contending armies during the recent World War.

The European Beech makes up about 70 or 75 per cent of the forest stand in the famous town forest of Sihlwald, which belongs to the city of Zurich, Switzerland. As early as 1422 the City Council of Zurich decided that not more than 20,000 pieces of timber could be cut annually in the Sihlwald. This is probably the oldest record of a regulation of the forest cut in any public-owned forest.

Beech is unquestionably the greatest fuelwood of continental Europe. It is not only valuable because of its wood-producing capacity, but also because of its cleanliness. It has no equal as a fuelwood. In continental Europe it is prized so highly that no other fuelwood is used if Beech is available. The peasants eagerly collect the twigs and small branches, and after bundling them carry the bundles to their homes, where the faggots are used for general fuel purposes. Such an extensive and complete utilization of all parts of the tree is responsible in a large measure for the attractive and clean forests so common in continental Europe. They stand in strong contrast with some of our American, debris-laden, fire-scarred and devastated forest areas.

A number of ornamental varieties of the European Beech have been developed, and are being introduced

extensively into the United States. Among them are the Weeping Beech, the Purple Beech, and Cut-leaf Beech. These three varieties are common in our gardens, lawns, and parks, and will unquestionably continue to hold a prominent place in ornamental plantings and general landscape work.



BEECH IS THE FOREMOST FUEL WOOD OF EUROPE. PEASANTS EAGERLY COLLECT EVEN THE TWIGS AND CARRY THEM HOME IN BUNDLES FOR GENERAL FUEL PURPOSES

The Beech produces nuts that are a nu-

tritious human food. In ancient times they were used extensively by man for food. They were also a big factor in the pannage industry. Thousands of hogs were formerly fattened upon the Beech nuts, and it is said that the resultant pork was exceptionally delicious to the taste.

Next to hunting, pannage was, in the early days of forestry, the chief usage of beech forests in Europe. The records of the pannage industry in Germany date to the Twelfth Century. During the Sixteenth and Seventeenth Centuries the people living near the forest divided the pannage areas among their herds and swine, for at that





THERE IS NO WASTE IN THE BEECH FORESTS OF EUROPE. THE STUMPS ARE LOW AND THE FOREST FLOOR IS CLEAN

time the rearing of swine had attained great importance and produced considerable wealth. Even today hogs are pastured extensively in Serbia, Hungary and Galicia.

The forests of Europe regard the Beech as the mother of the forest soil. It has no equal as a conservator of forest soil fertility. In many localities it is used for



HAULING BEECH BRANCHWOOD FROM THE FAMOUS CITY FOREST OF ZURICH IN SWITZERLAND, WHERE BEECH COMPRISES 75 PER CENT OF THE FOREST LAND



under-planting other forest trees which rob the soil of its fertility. It is a shade-enduring tree and will grow under the canopy of other trees. It produces enormous quantities of leaves which, upon falling to the ground, form a leaf-mulch on the forest floor that in time develops into humus and becomes available as tree food for subsequent forest crops.

No other tree is prized so highly as a soil builder and soil conserver as the European Beech. It is not found in every part of continental Europe, but locally it is a big factor in forest crop production. Just as it is the

all been developed from the European Beech. They can readily be identified either by their copper color, by their weeping habit, or deep-cut leaves.

There is only one kind of Beech native to the United States. It is, therefore, a simple matter to deal with the Beech tree in this country, for it stands alone. It has no nearer relatives than the Chestnuts, Chinquapins, and the Oaks.

Our native Beech prefers rich, moist, bottom lands, but it also thrives on the rich, gravelly, and moist uplands. It is found from Nova Scotia to Ontario, and



EUROPEAN FORESTERS TELL US THAT BEECH IS THE MOTHER OF FOREST SOILS. IT IS USED EXTENSIVELY TO UNDER-PLANT OLD STANDS OF SCOTCH PINE, EUROPEAN LARCH AND NORWAY SPRUCE

leading species in the Sihlwald of Switzerland, so it is the foremost tree in the Odenwald of Germany. There is no other tree that can take its place. It has characteristics peculiar only to itself, and supplies products of a kind and quality not produced by any other tree.

The European Beech may be distinguished quite readily from our common American Beech. Its head is more oval than our native tree, and its bark is darker gray. Its leaf is glossy, dark-green above, paler beneath; and it is smaller than the leaf of our American Beech. The cultivated ornamental varieties of Beech have practically

Wisconsin, and south to Florida and Texas. It often attains a height of 90 to 100 feet, and it is not unusual to find specimens with a diameter of from two to four feet.

The name "beech" has come down from ancient times. It is one of the oldest tree names in use. It is said that the word originated among the old Aryan tribes of Asia, who were among the oldest inhabitants upon the face of the earth that used the written language. For the want of better material, they cut letters on beech bark, and a piece of such writing was called "boc." It was but a step



to the word "book," which meant a collection of written material or "bocs." Both the words "beech" and "book" come from the same word "boc," and the connection between them is very evident. It is said that in ancient times, probably five thousand years before the building of Solomon's Temple, any library beyond the Euphrates River was made up of several cords of trimmed and lettered beech bark. Since this bark was perishable, it has wholly disappeared, and nothing now remains of these early libraries of beech bark.

The distinctive features of our native Beech are so striking and so different from other trees that it may be recognized very easily at any time of the year, and when once known the tree cannot be forgotten. One distinctive feature that is present throughout the entire year, and may always be relied upon, is the Quaker-gray, close-fitting, smooth bark upon which the American youth has been cutting his initials and other outline carvings. The practice of cutting initials upon the bark is not to be commended for it only defaces the appearance of the trunk, and permits the collection of large quantities of filth and foreign material in the cut depressions that are placed in the bark. The Beech is without question the best-groomed of all the trees native to North America. It always appears clean and attractive, and any practice which tends to deface the beauty of this clean tree should be stamped out completely.

It is not necessary to rely on a single distinguishing characteristic to identify this tree, for even in the midst of winter one can find striking features. The slender, sharp-pointed, conical winter bud, about three-quarters of an inch long, and covered with ten to twenty reddish-brown scales, cannot be confused with those of any other native forest tree. The opening of these unusual buds in spring time is a process which is worth while watching, for there is no phenomenon in all Nature that is more interesting and instructive. At first one notices only a slight swelling of the bud. Then there appears to be a period of rest, but in reality it is a period of prepara-

tion, for all at once the bud opens up and the new growth shoots forth at a rapid rate, and in the course of a few weeks the entire growth of the season is completed. The belief is prevalent that our forest trees grow from early spring to late in fall, but this is not correct. For one year the writer selected one hundred trees and measured their growth daily. He found that most of our common trees make about 90 per cent of their height growth in less than forty days in early spring, and usually rest for the remainder of the year.

Through the long summer months there is no tree in our forest that is more beautifully clad than the Beech. Its leaves are ovate, stiff, and marked with straight veins, and bordered with wavy margins. A close examination of a Beech tree will show that the leaves are produced in large numbers and arranged closely on the twigs. This close arrangement of the leaves forms a dense shade, and in autumn upon falling to the ground forms a dense leaf-cover on the forest floor. There is no forest tree that produces a more copious crop of leaves than the Beech. This accounts for the fact that it is regarded as the mother of the forest soil, for it does not only maintain, but it even improves



A WELL-MANAGED BEECH FOREST. THE FOREST SOIL IS FURROWED TO PREVENT EROSION AND HELP THE GERMINATION OF TREE SEEDS

the fertility of the forest soil. From early to late in the fall the Beech, next to the Chestnut, is the most frequented of the native trees. It produces a triangular, brown nut that is edible. It is prized by man, squirrels, blue jays, and many other domestic and wild animals. A trip to a Beech tree in fall will always be rewarded by finding the ground beneath it covered with prickly burs. Upon opening one of these burs, two triangular, brownish, thin-shelled nuts are usually uncovered, which contain a sweet and edible kernel. The nuts are produced in such large numbers that in spite of their edible qualities, many remain hidden in the leaf cover and germinate the following spring.

One of the most impressive sights in the forest is to see a broad-spreading Beech tree with thousands of small seedlings growing beneath its shelter. The writer has



found as many as 143,000 small Beech seedlings on one-quarter of an acre of forest land in the northwoods. One of the strongest weapons that this tree possesses is its power to produce a large number of strong and vigorous offspring. This heavy production of seed insures the continuation of this tree. The young seedlings endure a dense shade for many years. It seems as if they patiently awaited the day when the forest canopy above them will be opened up sufficiently to permit them to begin their height growth and take their place in the forest stand.

The Beech is one of the most clannish trees of the forest. Occasionally one finds solitary specimens, sometimes it occurs in groups, and it is not unusual to find extensive pure stands that are made up almost entirely of Beech. This is attested by the fact that one frequently finds such names as "Beech Flat," "Beech Ridge," "Beech Woods," and "Beech Bottom" in local use.

For many years the wood of the Beech was used little



THE QUAKER-GRAY, CLOSE-FITTING, AND SMOOTH BARK OF OUR NATIVE BEECH DISTINGUISHES IT FROM ALL OTHER FOREST TREES.



#### THE BEECH HAS MANY DISTINCTIVE FEATURES

1. The pollen-bearing flowers occur in small drooping balls and appear when the leaves are one-third developed.
2. An enlarged pollen-bearing flower.
3. An enlarged seed-producing flower.
4. A branch with mature leaves and ripe fruit burr.
5. A Beech seed.
6. A twig with typical winter buds.
7. No other tree has winter buds that can be confused with the long, slender and pointed buds of the beech.

for lumber, but long ago it was given an important place as firewood and furnished much of the raw material in the manufacture of charcoal. In recent years methods have been developed by which Beech wood may be seasoned and treated in such a way that it is now a rather popular wood upon the market. Many million feet of it are now manufactured into flooring and it is being substituted in many places for purposes for which Maple was formerly used almost exclusively. Its modern uses are many. There is scarcely a manufacturing establishment east of the Rocky Mountains that manufactures hardwood commodities, especially those used in the household, that does not use Beech. In Michigan alone there are about 30,000,000 board feet used each year in the manufacture of boxes. It is widely employed in the manufacture of furniture, vehicles, agricultural implements, wooden ware, and musical instruments. Approximately 75 per cent of all the wooden household articles that are sold in 5, 10 and 25-cent stores are made of



Beech. It is also used in the manufacture of chairs, brush handles and shoe lasts.

Beech may be regarded strictly as a forest tree. This does not mean that it will not grow in the open, but when it develops in the open it produces poor lumber, and is rather short and limby. It appears that the small Beech seedlings must have shade if they are to develop well,

but after the trees have reached middle age they will endure considerable light.

The Ancients loved the Beech and praised it in song and story. Today we regard it highly as a forest tree, for it conserves the fertility of the forest soil and products, and produces large quantities of valuable forest products.

## "HALL OF FAME" FOR TREES

*The old state of Massachusetts is the banner state for interesting trees. There are several reasons for this distinction. Massachusetts was the chief theatre of the Colonial Wars, and of the Revolution—that great history-making epoch; it is the second oldest settlement; its soil is well adapted to the growth of trees; it was the first state to organize a Horticultural Society whose duty is to give publicity to trees where it is due, as well as to care for them. Thirty years ago this Society issued a call throughout New England for minute records of all "Large, Old or otherwise Interesting Trees." In a few weeks there were two hundred and forty-four responses; giving the variety of the tree, exact location, height, girth, spread*



Courtesy U. S. Forest Service.

THE WAVERLY OAK

*of branches, age, and particularly the history connected with it. One hundred and ninety-eight of these trees were in Massachusetts! Massachusetts stands foremost of the forty-eight states in her regard for trees. Just a trip through that beautiful, picturesque, park-like state and one will see evidences of this activity on every hand. At Waverly is a group of oaks, recognized by the Forest Service to be more than four centuries old. They must have been quite sizable trees when the Norsemen and the Indians were rivals for dominion in this section of the country. These oaks stand along the bank of Beaver Brook, and show evidences of many a long fierce battle with the summer storms.*



# "HALL OF FAME" FOR TREES

## THE WASHINGTON WILLOW

This Washington Willow at Constantine, Michigan, is nominated for a place in the Hall of Fame for trees with a history by Paul R. Westerville who records with the Association these facts:

In the fall of 1876 the Hon. Franklin Wells and Mr. John Jones of Constantine, Michigan, together with their wives, visited the Centennial Celebration at Philadelphia, returning by way of Washington, D. C.

While in the capital they went to the tomb of George Washington over whose grave weeping willows had been slipped from those over the tomb of the great Napoleon at St. Helena. The ladies desired to take a branch home with them, so Mr. Jones severed a few twigs with his knife and gave them to the ladies.

Mrs. Wells succeeded in keeping one alive by carrying it in a well-moistened handkerchief. All others failed to survive. Upon reaching her home on Washington Street, Constantine, Michigan, Mrs. Wells placed the slip in a wide necked bottle of water and allowed it a place on a south window sill of the house shown in the picture, where with sunlight, air and water it flourished and took root.



THE FAMOUS WILLOW, SLIPPED FROM ONE AT THE TOMB OF THE FATHER OF HIS COUNTRY, A SCION OF THE ORIGINAL NAPOLEON WILLOW AT ST. HELENA.

In the following spring of 1877 it was planted at the north end of an old-fashioned English garden, where it stood as a sentinel for 40 years. Early in the summer of 1915 on a very quiet Sunday morning at church time, as the minister pronounced benediction this wonderfully well-balanced tree, after a half hour's cracking fell to earth. Its loss was greatly mourned, but after all it is not dead for Paul R. Westerville having admired this tree from childhood, had taken branches to his new home in Kalamazoo, Michigan, where he planted them in parks, cemeteries and other public places.

## BATTLE GROUND OAK

To mark the 140th anniversary of the Battle of Guilford Court House, North Carolina, March 15, 1781, the American Forestry Association announced that "The Battle Ground Oak" had been given a place in the Hall of



Fame for Trees with a history which the Association is compiling. The nomination was made by Mrs. Dorian H. Blair of Greensboro, North Carolina, who is the North Carolina State Historian of the National Society of the Daughters of the American Revolution and a member of the Guilford Battle Chapter.

Although the surrender of Lord Cornwallis was at Yorktown, many historians claim the decisive battle of the Revolution was fought at Guilford Court House. General Nathanael Greene directed the battle from beneath this tree, which is now 21 feet in circumference at the base and fifteen feet in circumference at its smallest part. The tree is about 75 feet high and has a spread of more than 100 feet, Mrs. Blair informs the Association. The battle ground is now a National Park.



# THE "HALL OF FAME" FOR TREES

## THE PARENT NAVEL ORANGE TREE

President Theodore Roosevelt officiated at the replanting of this famous tree at Riverside in May, 1903. At the ceremony, Mr. John G. North, President of the Historical Society, addressed the President as follows: "This little tree is the progenitor of that great industry which has done most to make Southern California famous. Two trees, of which this is one, were brought from Bahia, in Brazil and sent to Riverside by the Agricultural Department at Washington in the year 1874. From these two trees, by the process of budding into seedling stock,



PARENT NAVEL ORANGE TREE IN COURT OF MISSION INN, RIVERSIDE, CALIFORNIA

all of the navel orange trees of California have sprung. The fruit of this tree is so perfect, its descendants so numerous, its posterity so great, its family so enormous that we believe it merits your unqualified approval."

President Roosevelt commented that the tree showed no signs of race suicide. Mr. North then said, "We ask you to plant it in its new home in order that we may cherish and care for it here and that in our thoughts it may ever be linked with the President who planted it for us. We shall protect and care for it, but whatever may happen to it, its life has been so useful, its work so beneficent, its influence so far-reaching that nothing can destroy these. And for yourself, Mr. President, after we have looked into your face and grasped your hand, and your work calls you from us, the great and good things

you have done and are doing, the story of your career, the influence and inspiration of your life will remain long with us and continue to bear fruit among us." Prophetic words, as they are recalled today. The tree has recently been nominated for a place in the Hall of Fame by Mr. Frank Miller, of Riverside, California.

## FAMOUS BLACK WALNUT

A walnut tree planted at Salem, Oregon, fifty-three years ago by Mrs. Eugene Breyman, a pioneer in the Oregon country, has been nominated for a place in the Hall of Fame of the American Forestry Association at Washington by Senator Charles L. McNary of that state. The tree is a California Black Walnut and stands on the property of Mrs. R. P. Boise, a daughter of Mrs. Breyman. Senator McNary who is in the picture has the measurements of Prof. C. A. Reed of the Department of Agriculture, which show the tree to be ten feet eleven inches in circumference where Senator McNary's head touches the trunk. Several tons of nuts are harvested from this tree every year, Senator McNary informs the



THE OLD WALNUT GIANT THAT WAS PLANTED IN THE PIONEER DAYS OF THE OREGON COUNTRY.

Association. Mr. McNary and Mrs. Boise are brother and sister and the senator makes his home when in Oregon, at Salem.



# PALM CANYON, CALIFORNIA

By A. E. Demaray

L YING fifty-five miles south and east of Riverside, California, is the village of Palm Springs, a bit of Arabia transplanted to the western hemisphere. Here a unique winter colony has been established with buildings partaking of near-eastern architecture and with date palms abounding in great profusion. Two or three camels bringing mail and passengers from the Southern Pa-

warmer, drier air of the desert region, a transition not gradual but abrupt, as the State highway is traveled through the pass north of the San Jacinto Mountains. Next, there is the wonderful panorama of the desert with numerous man-made oases of irrigated lands and always with the towering mountain range above, then the village nestled on the edge of the desert at the base of Mt. San Jacinto.

But a few miles to the south is the supreme climax in this land of climaxes. Here in several canyons are growing scores of the beautiful Washington palms, the only native palms in California. There are many other varieties of plants, including several interesting cacti,



Photograph by the National Park Service  
AN OASIS IN THE DESERT

The palm trees are tall and graceful, and the native life lends picturesqueness to what might be a bit of Arabia transplanted to the western hemisphere.

cific Railroad, five miles distant, are all that are needed to complete the picture.

With this artificial setting to enhance the region there is probably no more interesting motor trip to be taken than the ride from Riverside to Palm Springs. First, there is the change from the humid atmosphere of the territory reached by the winds from the sea to the



Photograph by the National Park Service  
NATIVE WASHINGTON PALMS

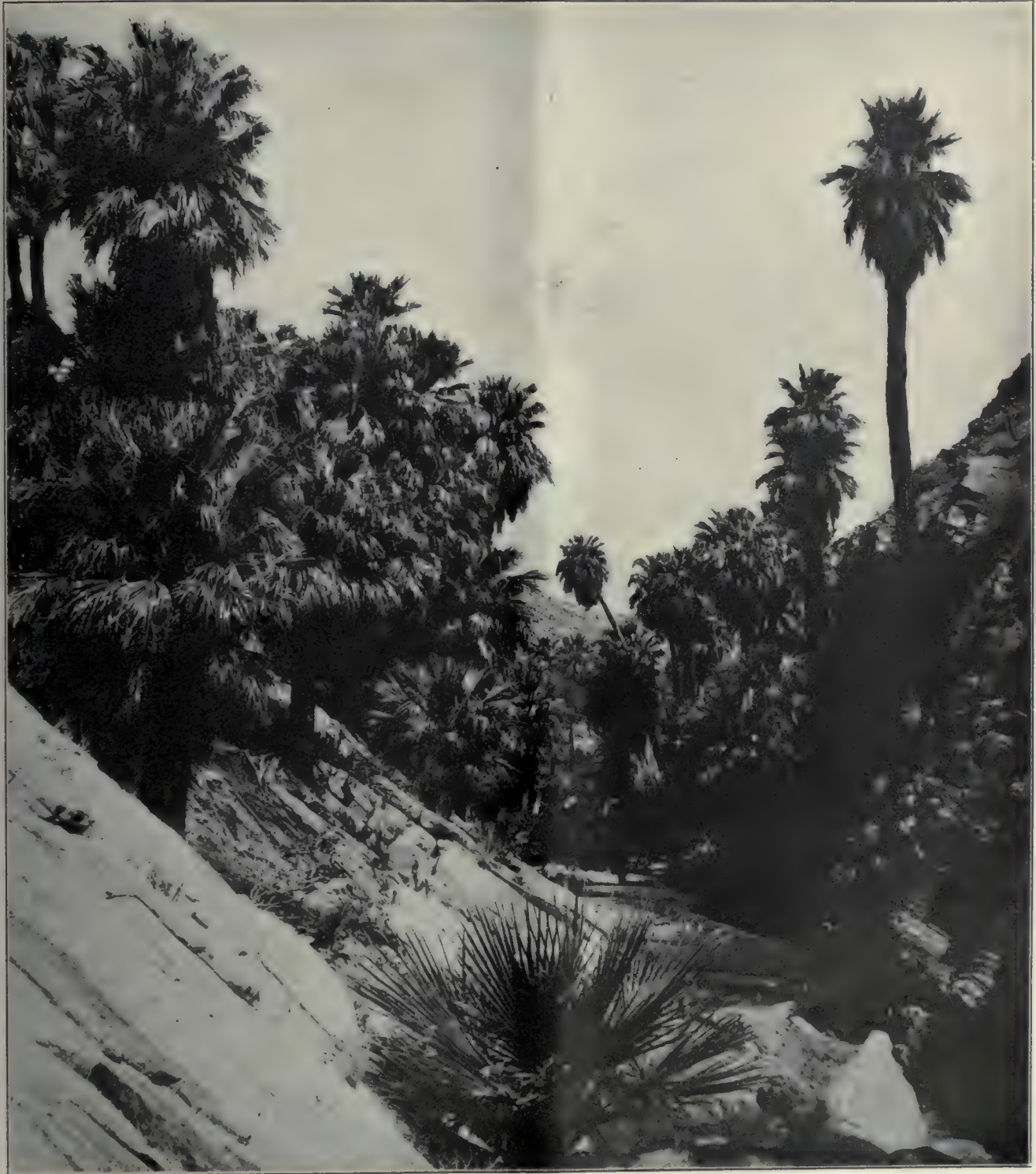
A bit of the little village of Palm Springs, nestled on the edge of the desert at the base of Mt. San Jacinto.



and the whole forms a most extraordinary botanical collection. There are three canyons—Palm, Andreas and Murray—all in comparatively close proximity to each other. Palm Canyon is the largest, and for a distance of 10 miles the native palms grow along the shores of the little stream that flows through it. Most of the trees, however, are concentrated in relatively small areas in each of the canyons near the point where their streams

leave the hills. As the streams leave by tortuous routes it is impossible to see into the canyons from along the highway and it is necessary to ascend to points considerably above their floors in order to look into them and reach their palm groves.

Hence the supreme surprise of the visitor making his first trip. No palms or indication of palms are seen on the ride through the desert south of the village nor dur-



Photograph by Mode Wineman, Courtesy National Park Service

#### MAGNIFICENT PALM CANYON IN CALIFORNIA

It is a gripping scene, and the surprise of the beholder is complete and overwhelming—leaving the desert to come suddenly on a canyon filled with palms centuries old.



ing the ascent of the foot hills of the San Jacinto Range through vast areas of desert flora. Leaving the car and climbing on foot a ridge is reached and spread below is a canyon filled with palms centuries old. It is a gripping scene, and the surprise of the beholder is complete and overwhelming. It requires but a moment to descend to the water's edge.

Again the situation is superb! Mt. San Jacinto towers directly above and the views up the canyon are closed by tremendous buttresses of tinted rock. Looking down Palm Canyon the desert is disclosed and beyond are other

biggest and oldest trees have been burned numerous times by the Indians of the Agua Caliente Reservation, to whom the lands belong, in connection with certain ceremonies performed with the burning of the palm "skirts" while still on the living tree. Fortunately, the ceremonial fires do not apparently seriously injure them. But many of the trees are being cut down and carried away for various purposes and there is a great necessity for taking steps to save the unique growth.

A bill has been introduced into Congress to preserve the area as a national monument. As the lands belong-



A BEAUTIFUL PALM FOUND IN AFRICA

Wide World Photograph

A remarkable palm tree, which grows into the shape of a palm fan in Forcadass, Nigeria, West Africa. It is known as the traveler's palm, on account of the fact that one branch broken off would provide a good drink for a thirsty traveler. A remarkable feature of the tree is that the branches grow separately from East to West.

ranges of mountains. In form, in color and in proportion it is a scene hard to surpass.

The palm trees are tall and graceful, but most of them present an unkempt appearance with their "skirts" hanging dry and lifeless about their trunks. Many of the

ed to the Indians it was necessary to secure their consent. The bill has been passed by the House and the Senate and now only awaits the signature of the President to become a law—"a consummation devoutly to be wished."



# CABINWARD--CABINS OF NECESSITY

By Robert Sparks Walker

ON THIS subject, one who has lived in a cabin of necessity ought to be able to write fully and convincingly. Having a number of years' experience of cabin-life from the fact that necessity compelled my father to utilize the trees of the virgin land in a sort of primitive fashion, I hope I may be pardoned for making the statement that this much of "Cabinward," is a mere reflection on the past. The first thing that comes to our mind is, what really is a cabin, anyway? We hasten to ascertain what the old lexicographer says, and we turn with curious interest to the dictionary to find that he defines the word as meaning "a small home, cottage or hut." In the minds of the American people from custom and usage there has been established a definition which is a little bit different and which stands out more distinctly than the one left by Webster, for it is generally understood that a cabin is a small, rustic house built of logs. It is of no little interest to note how the meanings of words of this kind sometimes change. For example, the word cottage formerly referred to a small house of the poor, but now reference to a home by the use of the word immediately suggests a charming sentiment that carries with it no thoughts of poverty whatever.

In the real cabin of necessity, however, there was not an intimation of sentiment and no such thoughts were ever associated with it, because it was the dwelling place of our ancestors who were pioneer settlers. The thought of being compelled to dwell in a cabin was sharply if not bitterly spurned by proud young Americans for a century or more. This unfavorable consideration of the homes of American pioneers came naturally. Our early settlers were a proud and ambitious people. They yearned for something better than a mere log hut—a house of more dignity, more spacious and more expressive of their ambition to call home. So we cannot blame their descendants from cherishing the thoughts of a mansion. But despite the fact that proud ambition went lurking within the hewn logs of our ancestors, something greater had its birth there. Life in these cabins produced the only quality and the necessary quality to temper

proud ambition. That quality and great leveling power was humility. It is quite impossible to surround a cabin—just a plain, log hut—with any other kind of atmosphere than humility. This alone has made more American statesmen and other great men than any other influence in this country. The thing that made Abraham Lincoln great,



THE HUMBLE COT OF A LOVER OF FLOWERS

This cabin of necessity has been made beautiful by the profuse planting of blossoming flowers.



A TYPICAL MOUNTAIN CABIN

Well sheltered from the rains, this cabin of necessity—the home of an old bear hunter in the Smoky Mountains of North Carolina—illustrates one great use of forest trees.



and indirectly his name immortal, was simply a log cabin of necessity and humility. Cabin-rearing means for the individual, the tempering of a proud spirit. It was the cabin life that helped Abraham Lincoln appreciate the old, old poem, "O Why Should the Spirit of Mortal Be Proud?" To me today every cabin I observe bears a close likeness to that poem. To store all possessions and rear a family in a small cabin was to bow the knee in humility and this too meant industry. The sign of industry is a closed cabin door. Toil calls the occupants, both young and old to the fields of growing crops.

But it is interesting to study how sentiment changes. The cabins of necessity have not disappeared, but they

expensive mansions where not many years ago there stood on the same site a cabin of necessity.

In addition to steeping the occupants' souls in humility, the cabins of necessity blessed them otherwise. They brought no worry over house-painting, of fire insurance policies or house furnishings and the periodic house-cleaning time. During the cabin age of our ancestors, disease germs were practically unknown. The cabin of necessity is a bitter enemy to germ life. This is not at all strange, for fresh air and sunlight permeates the cracks and crevices of the cabins of necessity, and so disease germs are never bred or harbored within their walls. This, I think, in itself answers the familiar question,

"Why were our ancestors so healthy and free from disease?"

The popularity of the automobile will lead "cabinward," but not towards the cabin of necessity. A man who can afford an automobile, will not possess such



A TWIN CABIN

This little cabin of necessity was enlarged as the pioneer's family grew in size.

are on the wane. Though vanishing, some families of the present generation are still being nurtured in these charming houses built of logs and dirt, and particularly is this true in the South. It is doubtful however whether the last cabins of necessity will disappear until the American forests have been depleted of cabin timber. That will be many years to come. Not until then will they be doomed and so little fear is felt for extinction of the honorable mud-besplattered buildings.

The cabins of necessity have been melting under the heat of ambition forcibly moved by prosperity. Prosperity and ambition are sworn enemies to the cabins of necessity. Necessity cuts through the epidermis, and man's advancement is a series of successive moults. Today we look on many thousands of handsome and



ATTRACTIVELY SURROUNDED BY TREES

Happily located, this cabin of necessity has a leanto—a step forward in the evolution of home building in the forest.

a building. In driving out one pike road in a country where educational facilities are excellent, with high schools as well as grammar schools dotting every locality, in a twelve mile drive on a single thoroughfare, five cabins of necessity are passed. The pictures are all shown here. They are not pioneer Americans who live in them, but the occupants are tillers of the soil. They are not colored people either who have been thus tucked away cheaply by some aristocrat, but white families, who regard the Sabbath and believe in the principles of sani-



ation, and who go to their meals with pure hearts and clean hands as well as good appetites. This is maintaining the old pioneer standard of living, and the same atmosphere imbued with humility still pervades these



PLAIN AND SEVERE IN LINE

This cabin was built in a country where necessity compels the use of shingles instead of boards for roofs, and brick instead of rocks or sticks for a chimney.

humble dwellings of people not extremely poor, but merely with limited means.

As the long train of automobiles glides past these humble cabins, sincere appreciation of their beauty and simple and rustic architecture is expressed. The large, commodious mansions that stand near the cabins go begging for warm words of admiration, while the



JUST A CABIN OF NECESSITY

The closed door indicates no lack of hospitality on the part of the owner, but simply denotes his absence in the fields.

cabins of necessity are claiming the attention of the close observer. And then, if a halt is made, it must be made at a cabin. To do otherwise would reflect on the fancy of the stranger. The camera man passes all else by, yet finds it difficult to slip past an humble cabin a second time without again halting. He who passed is truly sorry that he has no business that will justify or warrant his making another exposure!

The twentieth century occupant of a cabin of necessity finds no life of sentiment in his home, due to the particular structure. He may have peace, contentment, flowers, and a few dogs and cats, and feel the charm of living within a wall made of nature's limbs, but he did not choose this type of building for a home simply because he liked it more than any other. The cabin of necessity was all that was open to him. It was the only solution to the housing problem—the owner of the land had the muscle and brain, his land had the timber. Like a chemical action, the combination resulted in a cabin, and he steps "cabinward" with a proud ambition of some day being able to convert his into a modern manse, like the insect that must moult and thus change a skin each time physical growth takes place.

## LONE TREE OF 1849

THERE was an immense cottonwood tree four feet in diameter and very tall, which stood in Nebraska almost in the center of the continent, between New York and San Francisco, which was within one mile of that

center. Under its branches rested thousands of 49'ers en route to the Eldorado of the Pacific coast. It was the best known camping ground on the old California trail. From 1849, when the gold seekers rushed across the great plains down to the completion of the Union Pacific Railroad, the great tree was a guide post to the wagon trains going West. After the



MONUMENT TO THE LONE TREE

railway was completed there was no further use for the old tree and it eventually rotted away and died. A monument has been erected on this spot, representing a trunk of a cottonwood tree, and bearing the inscription: "On this spot stood the original Lone Tree on the old California trail."—H. E. Zimmerman.

HAWTHORNE particularly enjoyed planting trees on his estate. In the romancer's declining years he spent much time seated under the shade of his trees. It was here that he received his many distinguished visitors. And it is said that he never failed to call attention to his wonderful trees.



# Tree Stories For Children

## A Tree With Strange Apples

By Mary Isabel Curtis

YOU have never seen a tree with golden apples, have you? Neither have I. But there was such a tree, so I've heard, that grew in the garden of the Hesperides in those far off days when many things happened that seem strange to us now.

The garden where this wonderful apple-tree grew was so far away from where everybody lived and so hard to find that very few people saw the tree, even in those days. Besides, if anyone did find the garden it was next to impossible to pick any of the apples because a horrible dragon with a hundred hissing heads guarded the golden apple-tree, and this dragon never slept.

Now Hercules wanted some of these apples. Hercules was the strongest man that ever lived. Why, he was so strong that he could grasp a big tree with one hand and uproot it as easily as you could pick a dandelion! So he started out to find the way to the garden, and after walking many days he came to where a huge giant stood in a deep forest, holding up the sky on his great shoulders.

"Can you tell me how to find the garden of the Hesperides?" shouted Hercules with all his might in order that the giant, far up in the clouds, could hear him.

"To be sure I can," thundered the giant whose name was Atlas. "But who are you and what do you want in the garden?"

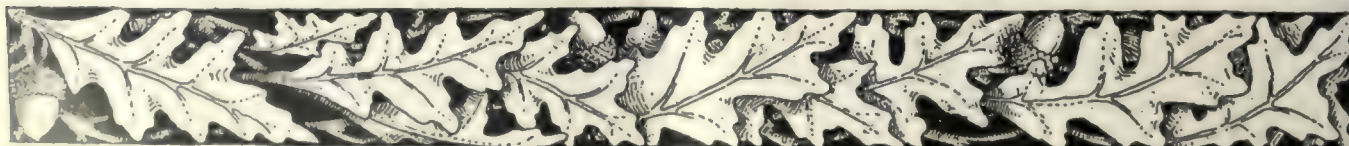
"I am Hercules," replied the other, "and I am after some of the golden apples growing there."

"I've heard you are a strong man, Hercules," said Atlas. "Do you think that you are strong enough to hold the sky upon your shoulders?" Hercules thought what a great thing it would be if he could boast that he had had the strength to bear the burden of the sky; and the upshot of the matter was that Atlas agreed to go for Hercules and gather the golden apples if Hercules would hold the sky till he returned. So Hercules climbed a mountain nearby, to make himself as tall as possible, and received the sky upon his shoulders, and the giant strode away.

To tell the truth, the sky was very heavy, and Hercules was glad enough when he saw Atlas coming back again carrying a branch from which hung three great, golden apples. But the giant had enjoyed his little vacation, not to mention the pleasure he had had in killing the hundred-headed dragon, and he was in no hurry to take back the burden of the sky. "You keep it a while longer," said he, "and I'll take the apples for you anywhere you say."

Hercules was dismayed at this suggestion, but he didn't dare to show it. After hesitating for a moment he agreed, only he asked Atlas before he went to hold the sky for a moment—"Just while I make my coat into a pad for my shoulders," he explained.

"Certainly, I'll do that," said the stupid giant; and throwing down the apples, he took back the sky. Then Hercules picked up the three golden apples and marched off while Atlas shouted after him in vain. Now, when you hear the thunder rumbling you can fancy it is Atlas calling to Hercules to come back again.





# PRACTICAL MAHOGANY PLANTING

PROFESSIONAL foresters who are familiar with tropical forests and forestry are occasionally called upon to furnish practical information in reference to planting and cultivating mahogany trees, says the *Hardwood Record*. The demand for mahogany lumber, especially in the American markets, and the extensive tracts of unused land suitable for growing the American mahoganies, serve as an inducement to intelligent landowners and corporations to turn their attention to these trees. For the production of artificial groves, timber belts, and shade for public roads mahogany is pre-eminent over all other varieties of tropical American timber trees. It is without doubt among the most profitable kind for forestry purposes and is at the same time one of the most widely distributed of all tropical evergreen trees. In its natural range it grows more or less sparingly from Tampico in Mexico southward through Central America into South America and through the principal islands of the West Indies, including the extreme southern portion of the state of Florida.

Its natural range, however, has been increased to the south by planting. In the Guianas, northern and eastern Brazil, the tree has been planted in a small way, chiefly for shade, and grows remarkably well. In East and West Africa small experimental plantations of the American mahogany have also been successfully made, and in India it thrives equally well and makes phenomenal height growth during the first two decades of its existence. A great many fine trees are now growing in parts of India, Ceylon, and the Sunda Islands. In fact, plantations have been made in the Philippines and also in the Fiji Islands with evident success. Thus far in tropical America mahogany has been planted to a very limited extent for the timber, to a greater extent for

shade and ornamental uses. There are two distinct species of commercial mahoganies growing naturally in tropical America. One is the Spanish or small-leaved mahogany (*Swietenia mahogni* Jacq.) and the other is the Mexican or large-leaved mahogany (*Swietenia macrophylla* King). There is a third kind which some boatnists

recognize as a distinct species (*Swietenia humilis*), but this is a small tree and grows only in the elevated parts of Mexico. It has been reported from Venezuela, but its presence there seems doubtful. The Spanish mahogany is usually found growing on the uplands and well-drained areas. It has small leaflets of a dull-green color and an open crown. The wood is hard, heavy, compact, dark-colored, and many of the logs exhibit considerable figure. The Mexican mahogany generally grows in the lowlands where the soil is not always well-drained. It has large leaflets of a glossy-green color and a dense broad crown. The wood is comparatively soft, light in weight, and in color somewhat resembling Spanish cedar. Only a small percentage of the logs show figure, but the wood works well and darkens with age similar to the Spanish mahogany. The Mexican mahogany has the advantage over Spanish mahogany because it grows nearly twice as fast during the first twenty years. For this reason nearly all the plantations consist of the Mexican mahogany, which grows up in a uniform stand and develops long, clear boles.



GETTING MAHOGANY OUT OF THE GUATEMALA JUNGLE FOR AMERICAN CONSUMPTION

Cutting down a big mahogany tree in the jungle of Guatemala. The lumberjacks were employed by an American, running a saw-mill at Obispo, near the West Coast. Within a year over 200,000 feet of mahogany were shipped to the United States via Puerto Barrios on the east coast, and New Orleans.

The Mexican variety is by far better adapted to widely varying conditions and gives very good results. It will grow in many localities outside of its natural range of growth without appreciably affecting its form and rate of growth. The most favorable range for economic planting is in the fertile valleys and moist slopes of hills and mountains in any part of tropical America. On





Underwood and Underwood

#### THE LITTLE SAWMILL OF BIG ACHIEVEMENT

The little Wallace sawmill, which cut over 200,000 feet of the finest mahogany lumber for the manufacture of airplanes in the United States. This mill was run through the rainy season, at a time when all other mills in that land of *manana* take a long rest. Wallace went into the Guatemala jungle with only two or three white men to help him set up a little sawmill, hired a crew of natives and got to work.

upland soils, especially toward the northern limits of its natural range, Mexican mahogany makes a slow growth. In good soil it grows rapidly into trees of noble proportions. Its presence is usually an evidence of good soil, and in Mexico it is often referred to as a "witness tree," being regarded as a "witness" to good soil. The ideal conditions for its growth are found in the rich, moist soil of bottom lands or on fertile hillsides. A calcareous soil or a sandy loam, containing a large quantity of humus, overlying a deep subsoil of gravel and a water table in which the long tap-roots can find a normal supply of moisture, furnishes the best conditions for mahogany growth. Under such conditions the rate of growth is fairly rapid and is continued up to a mature age. In good situations indi-

vidual trees have made a diameter growth of nearly an inch a year, but under average conditions an increase of three-eighths to one-half is all that can be expected and lumber of good merchantable quality will be procured in from forty to sixty years.

The trees are very easily planted. Seeds may be gathered or purchased in southern Mexico or British Honduras and planted in beds during June and July. When the young trees are one, two, or three years old, they are set out in rows ten by twenty feet. They grow readily and need very little care and no cultivation. While success is possible without any further attention in many cases it is far safer to keep down tall weeds and any other plants immediately surrounding the young trees for the first two or three years so as to give them a good start.



Underwood and Underwood

#### A HUGE LOG ON THE WAY TO THE MILL

Logging in Guatemala for mahogany lumber. The crew had to work two days with a team of twelve oxen to get this big load to the mills.



Land suitable for growing mahogany trees can be bought in almost any section of the West Indies and the Spanish Main for less than two dollars an acre. In fact, free concessions can be procured from some of the governments in Central and South American countries for establishing mahogany plantations.

It is difficult to show just how profitable it will be to grow mahogany trees on a commercial scale. The question will naturally be asked when returns may be expected and how great these returns will be. The first trees should be ready for felling in twenty or twenty-five years, but by that time the market price of mahogany will undoubtedly be much higher than today, since there is no danger of over-production. The advantage of having these trees on a comparatively small area re-

duces the expense of getting the logs to market and increases the profit over that in getting the logs from the natural forest. The initial cost of establishing the

*Expenditures:*

Clearing 100 acres for planting.....	\$ 1,275
Nursery stock.....	600
Preparing holes and planting.....	1,125

Total cost first year.....	\$ 3,000
Cleaning and supplying first and second year....	1,500
Care and maintenance up to sixtieth year.....	11,400
Interest on the money invested.....	14,100

Total cost.....\$30,000

plantation is not very high. An estimate of the cost of farming a mahogany plantation of one hundred acres and the probable financial results are given above, labor costing fifty cents a day.

## DISAPPEARANCE OF OUR HARDWOODS

A GOOD deal is said from time to time about the lessening supply of timber in this country, due to lumbermen, land clearing, and fire; but there is reason to believe that the American forests were losing out before men had anything to do with the matter and that more kinds of trees had disappeared than now remain. A bulletin compiled by Frank Hall Knowlton and published by the Department of the Interior at Washington, says the *Hardwood Record*, indicates, if it does not prove, that our forests were richer in trees, particularly hardwoods, a great many thousands of years ago than they were at the time of the discovery of America. The evidence is found in the records of geology, where imprints of leaves have been preserved in the rocks, telling of species which were living at the time the clays were deposited which later changed into rock.

An examination of the lists of leaves thus preserved shows that many species once growing in America are no longer found here. For example, there are now two species of persimmon in the United States. There were once seventeen species. Fifteen have disappeared. The record goes back to Cretaceous time, some hundreds of thousands of years ago.

There were eighteen species of yellow poplar. Only one remains. Some of the most ancient had leaves shaped much like those of willows, except that the apex was cut off, with the telltale notch which identifies yellow poplar to this day.

There is now a single species of red gum, but twenty-three species once grew in the American forests.

There were twenty-three kinds of elm then, and five are here now.

Our single species of sassafras is all that remains of the twenty-five species which once grew on this continent.

We still have three sycamores, one in California, one in Arizona, and one east of the Rocky Mountains, but there were once thirty kinds.

There are now four kinds of walnut in this country, but thirty-five kinds grew here in the past.

Our forests are still well supplied with magnolias, there being seven; but thirty-nine species grew in America at former periods.

Cottonwoods, including the aspens and balm of Gilead, still number ten species in the United States, and it is a generous number; but no fewer than eighty-three species left records in the rocks during past ages.

Two fig trees survive, both in Florida; but these are the lone survivors of ninety-nine species which once grew wild in the American woods.

But the most interesting of all the record of oak. This is now the most abundant hardwood of the United States. It is most abundant in actual amount of wood and also in number of species. There are now fifty-two in this country; but these are no more than the respectable representatives of 126 kinds of oak which once grew here.

The foregoing figures should be qualified in one particular. In most instances the past records are preserved by leaf prints in stone or clay, and the print of a leaf does not tell how large was the tree from which it came. Some of those enumerated above may have been only shrubs, or small plants. There is no way of certainly determining that fact when the tree itself was never seen, and no part of the trunk has been preserved. The leaf is the most perishable part of a tree, next to the flower; yet all we know of scores of tree species which once grew in this country is derived from leaf impressions in mud—and mud itself is not usually regarded very durable. Yet, how much valuable knowledge has been obtained from such perishable things as leaves and mud! Some of them have come down to us through a million years. By the aid of such records it is possible to understand pretty accurately what our ancient forests contained and what they would have looked like, if a human being could have been there to see them.



# WOMEN CALLED TO ENLIST IN FIGHT TO

*New York Telegram*—"Westward the course of empire took her way some time ago, and the history of the lumber industry shows it followed the same trail. The movement has been from the East to the Lake States, to the South and thence to the Pacific Coast," says the Boston Post. "This is the last stronghold. All this has come to pass in two generations. At present we have enough remaining timber to last perhaps two generations more, according to the American Forestry Association. Thereafter we will have to depend for supplies upon home grown products."

"We have the forest land, we can keep it producing trees, we can re-plant such areas as are denuded. There are about eighty-one million acres of suitable land idle, Charles Lathrop Pack, president of the Association says. If we do not delay in adopting a proper forest policy, we can assure by the practice of forestry the future of the American lumber supply. There is no other way. "A treeless United States would eventually mean a sterile United States through the gradual drying up of rivers and other water ways, the arteries of fertility."

Isn't this something for us, everyone of us, to think about? Woman with her vote can make it count in the preservation of our forests. And every woman who has ground can dedicate a corner to the planting of a tree.

*Grand Rapids Herald*—The American Forestry Association has presented fir seeds to the French government to aid in the reforestation of territory denuded by battle. This will plant 30,000 acres and will go a long way toward providing a future supply of fir timber for France. France lost some of her timber because of attack by German shells, but the United States lost much more through inroads of the ax. France has an excuse for her present plight. The United States has no excuse. France has had her denuded battlefields only four years. Michigan has had thousands upon thousands of waste acres for a generation. It's about time we started on a serious basis.

*Pottstown News*—Millions of tree seeds have been given to France and Great Britain by Charles Lathrop Pack, president of the American Forestry Association, for the re-

storation of forests in the devastated war areas of France and the tracts of forests cut down in England for war purposes. Unless we in America stop destroying our forests, our country in another generation may be as lacking in forests as France. The area of forest land swept by fire each year is about twice the area cut over annually by logging crews. With a little common sense, Americans would raise a yearly crop of trees, just as they raise wheat, corn, cotton, etc.

*New Rochelle Standard*—The planting of memorial trees is not an uncommon thing

the name Hough, Franklin B. Hough? Most likely you do not for he was born 100 years ago, July 20, at Martinsburgh, Lewis county, N. Y. Few will remember the name yet he has as unique a monument as any man born in the last century, for Hough is the man who, after years of struggle, got the government to start a forestry bureau.

His centennial year is also the semi-centennial of the first Arbor Day, J. Sterling Morton having started that in Nebraska in 1872. Rothrock, the dean of forestry has just died and now Charles Lathrop Pack, president of the American Forestry Association is carrying on a campaign of education

on a scale such as those three old timers never dreamed of. Importance of forestry between the time of Hough and Pack is seen in the fact that Congress appropriated \$3,000 for Hough to start with. That would not pay the annual postage of the American Forestry Association today.

If you do not think the work Hough started and Pack is carrying on to interest the people in forest protection is far-reaching, try to name something into which the cost of forest products does not enter. This paper you are reading, the chair you are sitting in, the house you would like to build, the desk your child uses in school, your pencil, your golf club, the box in which came the peas the wife bought this morning—but why continue?

We must begin producing trees on a wholesale scale. Hough saw the trees were dwindling when he handled the census of the state of New York away back in 1855. If something is not done we may find ourselves where he said we would be in 1955. A national forest policy is one thing this country needs.

*Florida Farm and Live Stock Record*—Forests are wealth. Four-fifths of the South's virgin timber is gone, according to Ovid M. Butler, forester of the American Forestry Association. Southern mills dominated the great northern lumber markets for a score of years, by reason of their proximity to those markets and of the desirability of our yellow pine lumber. The naval stores industry must vanish if the pine forests disappear. And Florida furnishes the greater part of the naval stores of the country.

## Looks Like No Forest Policy Means No Lumber



—Tampa Tribune.

since the war. There are parks and boulevards in many cities which have been thus graced in memory of some of America's war dead. There is little need to go into the advantages of such a memorial. There are vast areas of unimproved land suitable only for tree planting. There are miles of shadeless highways which cry aloud for road-side beautification. If every county in the United States could, some day, have a memorial forest, the problem of forest conservation would practically cease to exist, and the nation would possess a chain of noble monuments of lasting and perfect beauty.

*Washington Herald*—Do you remember



# SAVE THE FORESTS OF THE UNITED STATES

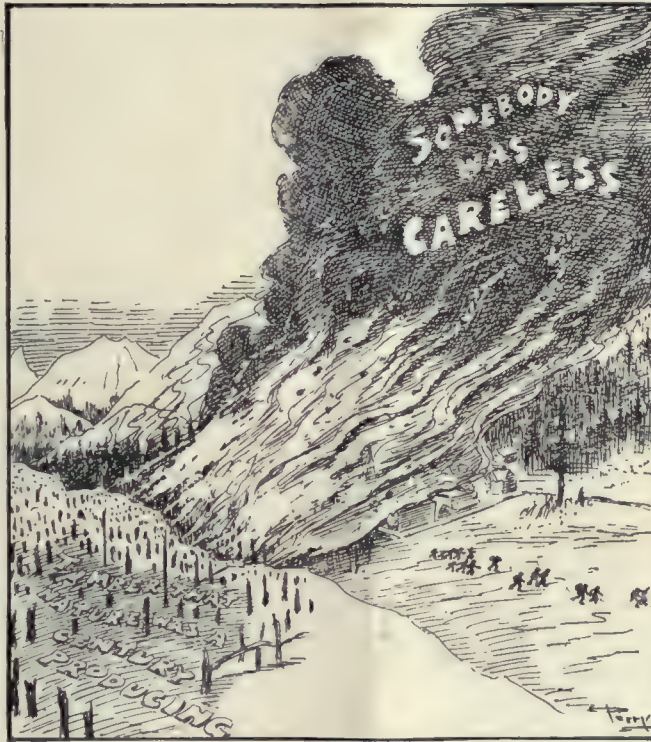
*New York Mail*—As matters now are, it will only be a comparatively few years until the Canadians completely control the paper-making industry. But that condition is not inevitable if this country wakens up to the fact that it still has tremendous possibilities of forest development and that our forest asset must be developed not only to save our paper-making industry, but to keep the price of all wood, which is an essential in practically every industry, at a reasonable level.

*Columbus Dispatch*—Measures are now before the senate looking towards the establishment of a forestry experiment station in the upper lakes region. Charles Lathrop Pack, president of the American Forestry Association, urges the business men of the upper lake states especially Michigan, Wisconsin, and Minnesota, to get behind these bills if they wish to see 20,000,000 acres of idle land within their borders again put to work in growing timber trees. The three states named led the entire country in lumber production for about 40 years. But they cut their wealth of trees away almost without thought of conservation or reforestation and today they are relatively unimportant factors in lumber production.

*Newark, O., Tribune*—We read that the American Forestry Association is now engaged in giving free seeds to Great Britain and to France. It is to be estimated that the gift to France will reforest one hundred thousand acres of destroyed forest lands. Until we read this we had no notion that this Association was engaged in this business on such a gigantic scale. It will be realized however, that the value to France of such a gift would be difficult to estimate with its tremendous areas of land devastated with the French people so occupied with their absolutely essential pursuits, as to prevent them procuring at once the necessary seeds, the value of this gift will be readily seen. Then too, the need of wood for purposes of war, the extra amount cut for fuel in a land where the supply is all too scarce, has made a dearth of timber throughout the whole of the country, where it was untouched by the direct ravages of the war. A movement in the United States

for reforestation is making great headway and vast tracts throughout the country are being restored as it were to a condition of forestation and incidentally of game preserves. For a hundred years there has been ruthless destruction of timber in the United States, and the necessary diminishing of it in Europe, and the movement now for reforestation on extensive scales will afford a boon to coming generations, and incidentally this restoration will mean the revival of so much natural beauty which has been rapidly destroyed by this deforestation ruthless or necessary.

## The Story the Forest Fire Tells



—Portland Oregonian.

*Boston Herald*—The chief trouble is that the trees are not being renewed fast enough to provide adequately for the country's future requirements. Much was done to improve the situation when, largely as a result of work by the American Forestry Association, our national government committed itself to the policy of forest reservation. The country-wide problem now is that of reforestation; it is to the country as a whole that the Federated Engineering Societies look for help. And they have done well in their appeal for forest renewal to stress its recreative and esthetic sides.

*Atlanta Journal*—Merest prudence de-

mands that Georgia take due steps, by way of cooperation with the national government in guarding her ever more valuable forests against fire. The example has been set by a number of southern states, notably Virginia, North Carolina, Tennessee, Louisiana and Texas, all of whom receive allotments of government funds supplementary to appropriations of their own for this important purpose. Georgia took a good stride forward in creating, last year, a state board of forestry whose primary business is to investigate and to recommend needful measures.

*Clinton, Ill., Ledger*—Congress next year will undertake to formulate a national forestry policy to save a remnant of our disappearing timber supply. The move comes about a century late.

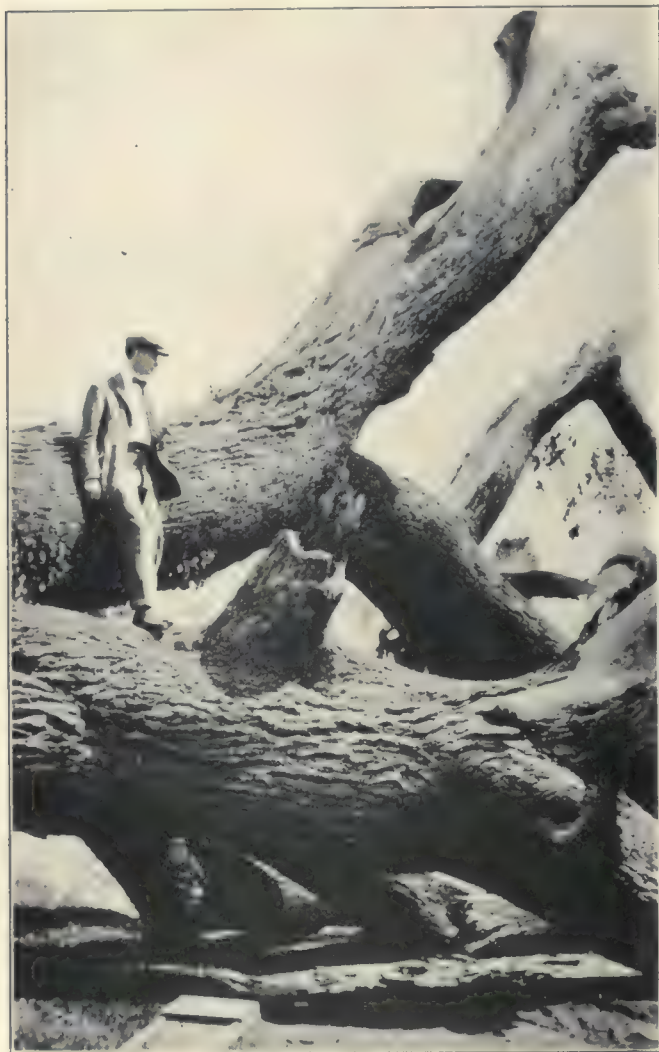
*Illinois State Journal*—It is quite well understood that forestry is one of our national problems. Its seriousness is pretty well recognized throughout the land. Definite movements are on foot to develop public opinion for a practical, sane and productive program to restore timber devastation and to insure to the future a reasonable supply of lumber. The other necessities for forestation are not being lost sight of, as the damages from floods and soil erosion make themselves clear to the naked eye. A timber denuded land is a lost land, unfit for habitation, cultivation or the sustenance of animal life. The problem must be attacked on a national scale.

*Huntington, W. Va., Herald-Dispatch*—Hundreds of hilltops through the south, hundreds of denuded mountain sides in the west, thousands of acres of swamp lands, boggy river bottoms and cutover areas throughout the country are merely awaiting seeding and care to grow again into forests. It is a vital, practical measure. It needs the interest and support of every citizen of the United States who has imagination and love of country sufficient to make him look even ten years ahead. We have an American Forestry Association and a Forestry Bureau in the government. Neither has the public interest nor support it needs. It is the task of the layman to render that interest and support.



## Giant Elm Falls

TO the record of losses caused by the terrific storm of Sunday afternoon, June 11, must be added the falling of the giant elm at Middletown, Connecticut. The picture and facts regarding the tree have been sent American Forestry by Mr. C. K. Dechard, of Meriden, who informs us that as the tree had been showing signs of instability for some time, the owner had arranged to have it taken down on Monday, June 12th, the day after the wind did the job. It was one of the largest elms in the country and located in the Westfield district, Middletown, Connecticut. The trunk measured 18 feet in circumference six feet above the ground and 23 feet 2 inches where the first limbs commenced to branch out.



THE FALLEN GIANT

The tree fell to the east, completely across the highway, effectively blocking it, and it was several days before the town authorities succeeded in clearing the road.

An examination of the root masses shows the roots to have entirely disintegrated with the exception of one corner, and it really seems a wonder the tree stood as long as it did.

While there are no records showing the exact date of the building of the house near which it stood, it is

said by the older people of Middletown that it was probably built about the year 1766, as it was customary at the time for a young man to provide a house upon taking a wife.

The house near which it stood was built by John Wilcox, who was born in Middletown January 15, 1740, and who married Eunice Norton October 16, 1766.

It is said in the neighborhood that when the site was being cleared and the house had been staked out someone said "don't cut down that young elm (which was growing about twenty-five or thirty feet from the prospective house), that will make a fine shade tree." So the tree was left undisturbed. In later years, when the house had passed into other hands after the death of the original owner, the tree was fenced about to protect it. It is regrettable that a photograph of the standing tree in its greatest state of perfection was not made, as a matter of record.

THE Forest Products Laboratory of the Forest Service, United States Department of Agriculture, was recently called upon to test wooden crates that would be satisfactory for carrying Army aircraft bombs. Seven types of crate were tried in the experiment and one type was evolved that would not only carry 300-pound bombs, but also 1300-pound bombs.

## SONG OF THE TREE DOCTOR

Mary planted a little tree,  
It flourished like a weed,  
And she became quite Poplar  
For her noble deed.

One day the tree began to Pine—  
Kept Mary up all night,  
Applying Balm of Gilead,  
To save it from the blight.

And when her Dogwood bark,  
She would Balsam and cry:  
"Spruce up! Spruce up! Beech Cherry,  
Sweet Apple of my eye!"

But the tree was Plum discouraged;  
A Gum had checked its heart,  
So with a rustling of the leaves  
Its spirit did depart.

Then Mary drank the Hemlock—  
She could not bear the blow—  
And now the Pear are sleeping  
Under the sad Willow.

Though this tale may be a Chestnut  
There's a lesson here Fir Yew;  
When you go to raising timber,  
First learn just what to do.

(Reprinted.)



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Dr. Frank A. Waugh, professor of landscape engineering at the Massachusetts Agricultural College, Amherst, Massachusetts, has been appointed recreation engineer in the Forest Service, United States Department of Agriculture. Dr. Waugh, a noted author, and one of the leading landscape architects of this country, will spend the summer formulating plans for the development of public camp grounds and summer-home sites in the National Forests of Colorado, Wyoming, Utah, Idaho and other western states. This study is a part of the established plan of the Forest Service toward providing adequate camp and sanitation facilities for the 5,500,000 persons who yearly seek rest, health and enjoyment in our National Forests.

## PENNSYLVANIA'S TREE PLANTERS

Water companies, owners of mining properties, and clubs of sportsmen in Pennsylvania planted more than 1,200,000 young forest trees on their holdings during the spring of 1922, according to an announcement made by Major R. Y. Stuart, the state's chief forester. During the last eight years the same groups have set out about 5,217,000 seedlings.

Last spring, the mining companies' plantings exceeded those of water companies and outing clubs by a wide margin. The former planted 840,000 young trees to provide a future timber supply for the operation of their mines. The water companies set out 320,600 and the clubs 59,400.

The largest individual planter was the spring of 1922 by a water company, which made by the Pennsylvania Power and Light Company, of Holtwood, which set out 70,000 trees. Ten thousand were planted by the Williamsport Water Company. Four other companies set out more than 25,000 each.

Of the mining corporations the Clearfield Bituminous Corporation planted 130,000. Nine other companies planted over 50,000 trees each.

## CAMP FIRE PERMITS REQUIRED

Federal permits to build camp fires are now required within the National Forests of the Pacific Coast States, announces the Forest Service of the United States Department of Agriculture. These permits are free and may be secured from all forest officers and other authorized agencies. Serious forest fires and unfavorable weather conditions have caused government officials to take this step as a matter of precaution.

Five hundred men are now fighting uncontrolled fires in the Rainier, Wenatchee and Snoqualmie National Forests of Washington. The Herman Creek fire in Oregon now covers 3,000 acres and is burning close to the Columbia River highway. In spite of the efforts of 165 fire-fighters, the conflagration has destroyed valuable timber and a sawmill; it now threatens a Forest Service ranger station.

High winds and low humidity, say dispatches, have caused the fires to leap repeatedly into the tops of trees and jump fire-line after fire-line as if they did not exist. Fire lookouts on their mountain peak observation stations have been ineffective for many days because of the dense blanket of smoke that hides the forests. The seriousness of the situation, say forest officers, can be gauged by the fact that Governor Hart of Washington recently issued an appeal to all persons engaged in logging throughout the state to suspend operations until rain comes. He also urged tourists and others to limit all fires to those of urgent necessity, and to extinguish every smoldering ember before leaving camp.

## MICHIGAN PAYS THE PIPER

Commenting on forest destruction by fire, District Forester George H. Cecil, of Portland, Oregon, cites the situation in which Michigan now finds herself. From a state whose forest wealth was considered inexhaustible she is reduced largely to a producer of fuel wood and other minor forest products—all because of indifference to fires, wasteful cutting and lack of reforestation. In other words, Michigan is now paying the piper for twenty-five years

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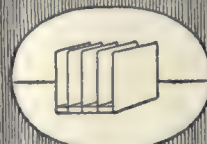
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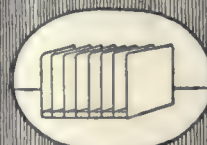
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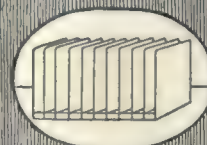
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ruthlessness, indifference and lack of forest foresight.

The building trades and the automobile and furniture industries of Michigan must largely import their supply of high-grade lumber from other states instead of growing it at home.

For the most costly classes of woods, such as those used for automobiles, furniture and building, Michigan goes as far south as the Gulf and as far west as the Pacific; she imports all told a little more than a billion board feet of lumber and timber annually, of which 400 million come from the Gulf Coast region and nearly 180 million feet from the Pacific Northwest. For these amounts the state pays not only an enormous freight bill but also the high prices incident to constantly dwindling forests.

The reforestation of Michigan's denuded lands would after a few decades, say forest experts not merely stop these costly importations but go far toward reestablishing the state's lost leadership in her once greatest industry—lumbering—and put it upon a permanent basis.

#### AIRPLANE TO LOCATE ALASKA'S LOST LAKES

Locating and photographing undiscovered lakes in the National Forests of Alaska are the latest uses to which the airplane has

been put, says the Forest Service, United States Department of Agriculture.

It has long been known that there are many lakes on the headlands and islands traversed by the inside passage between Seattle and Skagway that do not appear on any map. During the New York-Nome flight made by Army aviators, lakes were frequently sighted which could not be found on the latest and most authentic maps of the territory. Tales of unknown water bodies are constantly being brought in by trapper and prospectors. Less than a year ago a lake  $4\frac{1}{2}$  miles long and  $\frac{1}{2}$  mile wide was discovered at the head of Short Bay. This lake has over 1000 acres of surface area and is less than  $1\frac{1}{4}$  miles from tidewater, yet because of the surrounding territory's rough topography has remained unknown and unnamed.

Recognizing that many other of these "lost lakes" may be sources of valuable water power, the Forest Service has laid plans to map this no man's land of the north by means of aerial photographs. A few days' flight, it is said, will be sufficient to cover the area with a degree of accuracy that would require many years and great expense to accomplish by ordinary methods.

The work, which has been approved by the Federal Power Commission, will be done by seaplane, flying from Ketchikan as a base.

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### SOUTHERN PINE STRONG AS DOUGLAS FIR

THERE is little difference between the strength of the southern pines and that of Douglas fir from the Pacific Northwest, tests made at the United States Forest Products Laboratory show. True longleaf yellow pine averages heavier, stronger, and tougher than Douglas fir. True shortleaf pine averages heavier and tougher than the fir, but is about equal to it in strength as a beam or post. Loblolly pine, though averaging heavier than the fir, is somewhat weaker. The difference in strength between any of these pines and Douglas fir, however, is not so great but that low density pieces of the one species are weaker than the average for other species.

As far as strength properties are concerned, the choice between any two lots of southern pine and Douglas fir will depend upon the grade and density of the timber composing each lot. The Rocky Mountain type of Douglas fir averages considerably weaker than the Pacific Coast type.

### ONE SPARK

The weather was hot and dry. No rain for a month. The east wind moaned through the trees. Pine needles snapped underfoot. July in the forest.

The crash of falling trees. The ring of axes. The s-w-i-s-h of saws. Logs, logs, everywhere. Dry tops, branches, and slashing. And amidst all these a puffing donkey engine.

A glowing spark from the stack. A wisp of smoke. The hiss of burning pine. Crackling flames sweeping onward, skyward. A living wall of vivid fire. Black death and destruction.

ONE LITTLE SPARK—and in its wake 20,000 acres of fire-swept land; 15,000,000 feet of burned timber; four logging camps, 15 donkey engines, one locomotive, 35 flat cars, 20 houses and three automobiles in ashes, and \$90,000 worth of property gone up in smoke.

It all happened this summer in the state of Washington. It could happen any summer in any forest.

### ALCOHOL MADE FROM WOOD

People do not generally think of wood as a source of alcohol; that is the grain or ethyl alcohol formerly used for beverage purposes and still of use in perfumes, in manufacturing ether and as a solvent. It is quite possible, however, to make grain alcohol from wood waste through a process described by F. W. Kressman of the Forest Products Laboratory, Madison, Wisconsin.

This process is outlined in Department of Agriculture Bulletin 983, "The Manufacture of Ethyl Alcohol from Wood Waste," just issued. The making of ethyl alcohol from such things as straw, cotton, wood, and many other plant fibres is not at all new, but previously, except in very few instances, it was not possible to use these materials profitably.

There is wasted annually, Government experts estimate some 15 to 20 million tons of wood suitable for the manufacture of ethyl alcohol and capable of yielding about 15 gallons of alcohol to the ton.

## THE SERIOUS FIRE MENACE

"This is the most serious forest fire season we have had for several years, and unless the public who are using the forests are more careful even more serious fires than we have had are apt to occur," said George H. Cecil, District Forester at Portland.

"We have had few if any lightning fires to date, but we are very apt to have many of these during the early part of this month. No one can prevent the lightning fires, but if people who go into the woods, for business or pleasure, would only realize the constant danger from fires spreading we would have far fewer losses of valuable timber.

"The U. S. Air Service is assisting in the patrol again. As a precautionary measure, we have been compelled to require all campers, fishermen and hikers on the National Forests of Oregon to secure camp fire permits as is also done in the National Forests of Washington.

"If only the people who go into the forests would follow a few simple rules what a saving in valuable timber and expense to the government, states and forest fire associations would result," said Mr. Cecil.

"What we call the six rules for preventing forest fires are short and simple,

### WAKE UP!



before leaving them. Don't throw them into brush, leaves or needles.

(3) **MAKING CAMP.** Build a small campfire. Build it in the open, not against a tree or log or near brush. Scrape away the trash from all around it.

(4) **LEAVING CAMP.** Never leave a campfire, even for a short time, without quenching it with water and then covering it with earth.

(5) **BONFIRES.** Never build bonfires in windy weather or where there is the slightest danger of their escaping from control. Don't make them larger than you need.

(6) **FIGHTING FIRES.** If you find a fire try to put it out. If you can't, get word of it to the

nearest United States forest ranger or State fire warden at once."

When the great number of fires is considered, it is not surprising that statistics show that the area of forest land annually burned over is about twice that cleared by the ax for lumber and other purposes.

(1) **MATCHES.** Be sure your match is out. Pinch it before you throw it away.

(2) **TOBACCO.** Throw pipe ashes and cigar or cigarette stumps in the dust of the road and stamp or pinch out the fire

Chapin—in "America at Work."



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*"'BOGALUSA' STENCILED ON YOUR SOUTHERN PINE IS LIKE A CERTIFICATION ON A CHECK."*

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25 YEARS of CAPACITY PRODUCTION ahead of us in our own *unequaled stands* of THE FINEST VIRGIN TIMBER EXTANT; plus the knowledge of "BOGALUSA" products assured to you IN PERPETUITY by our far-reaching *reforestation* operations. You are thus protected, in the most practical way, in the complete satisfaction of your trade during the life of your business.

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## CANADIAN DEPARTMENT

By ELLWOOD WILSON



Moon's Douglas Spruce on grounds of Graduate School, Princeton University, planted in 1914, when two feet high. Photographed in June, 1922. Beatrix Farrand, Landscape Architect.

**"THE** Douglas Spruce is a tree for the million. It would be difficult to overrate its beauty. It probably grows faster than any other conifer." Thus Bailey's Encyclopaedia expresses the enthusiasm we also feel for this splendid tree. There is a softness of texture and color tone and a symmetry of growth that adapts it purely for ornament in groups and as specimens about the borders of the lawn. Its dense and rapid growth makes it extremely desirable for tall screen planting, effective in winter as well as in summer.

Douglas Spruce are reasonably priced:

	Each	Per 10	Per 100
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3 to 4 ft. _____	4.00	35	300
4 to 5 ft. _____	6.00	50	450

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The Canadian Society of Forest Engineers has suffered a great loss in the death of Mr. R. R. Bradley, Consulting Forester of Montreal. Mr. Bradley was one of the original members of the Society, and one of the best woodsmen in the province. Mr. Bradley was a graduate in law, and later took up forestry, going through Biltmore Forest School, after which he did considerable work in New Brunswick. He then became a consulting forester and did very good work during 1921 for the commission engaged in the investigation of the Department of Lands and Forests in Ontario.

The Canadian Air Board has done very valuable work during the past summer at Victoria Beach in the Lake Winnipeg district as main base, and subsidiary stations at Las Pas and Norway House. Fire detection work has been most successful, and in addition to this the Inspector of Surveys was able to visit all his parties in the district by plane in about one-third of the time ordinarily required. In British Columbia, unfortunately, the Forestry Service did not ask for help from the Air Board until the forest fires had gained considerable headway, but after taking the Deputy Minister for a flight, he became convinced of the value of the planes in fire detection and fighting. About a month ago the Air Board commenced work at the Roberval Station on Lake St. John, Quebec, for the Quebec Government, and considerable work is under way in exploration of that section.

Price Brothers & Company have been very successful with their airplane service in locating forest fires, and also in locating budworm-killed timber, and they have been engaged in taking strips of photographs usually along the water courses within their limits. The Spanish River, using a Dayton Wright two-engine plane, have at last report finished photographing 100 square miles of territory, and expected with proper weather to finish 1000 square miles by the 15th of August. The Fairchild Aerial Surveys Company (of Canada) have finished 250 square miles of aerial photography for the Laurentide Company, and have made river and power line surveys for the Shawinigan Water & Power Company. They also have a contract for 200 square miles of photography for the Ontario Government.

The airplane is more and more proving itself to be not only practical but a necessity in all kinds of woods work. Estimates of timber made directly from the photographs have turned out to be extraordinarily accurate.

Dr. Judson F. Clark has been asked by Premier Drury, of Ontario, to reorganize the forest service of that province. Dr. Clark was at one time with the Ontario Government before organizing the firm of Clark & Lyford, in Vancouver, and no better man could possibly have been chosen to take charge of this job. It is a tremendous piece of work and will mean a great deal to the Province if properly handled. The Ontario Government's publicity work by advertisements in the newspaper and reading matter furnished to various dailies and journals is a splendid step toward interesting the people of that Province in one of its most important natural resources.

Some very interesting experiments have recently been carried out in Australia in an effort to substitute Australian timbers in the manufacture of aircraft for spruce and fir from British Columbia. The majority of Australian timbers are classed as hardwoods, and one of these nearly two-thirds are of the Eucalyptus family. Although classified as hardwoods, however, these timbers vary enormously in weight and physical equalities, and timber suitable for almost any purpose is to be found among them. First of all a list of all timbers weighing less than 50 pounds per cubic foot was compiled and specimens were then examined to ascertain the nature of the break and quality of the timber; steps were then taken to ascertain which were obtainable commercially and whether they were plentiful or otherwise. This, coupled with questions of straightness of grain, uniformity of strength, etc., led to the reduction of the list to six species—Stringy Bark, Giant Gum, Sydney Blue Gum, Mountain Ash, White Ash and Long Jack. The Forestry Association of New South Wales was asked for samples of these timbers, which were not available immediately. Inquiry among timber merchants showed the indiscriminate use of the same common name for quite distinct species in the timber trade, there being at least seven distinct species sold under the name of "Mountain Ash." As some of the species included under the same trade name vary from 38 to 56 pounds per cubic foot and have moduli of elasticity of from 1,500,000 to 3,000,000, the question of selection was a real difficulty. However, these troubles were finally overcome and an order was received from the Australian Government to build six Avro 504K training machines, to be constructed from the native timbers, those to be used being Mountain Ash, White Ash, Cudgerie, Blue Fig and Queensland Maple. The three first will be used for the main structural members,



and are heavier than spruce and ash which they would replace, but their greater strength will allow some reduction in section. Queensland Maple has been used for airscrews or propellers, and several of these have been in use for a number of months with satisfactory results. The weight of the machines built with these timbers will not differ by more than 1 per cent from that of machines built from Oregon Pine, and the strength will be appreciably greater. All estimates of strength and weight were based on tests to destruction of actual components. As Australia is doing quite a good deal of flying and is continually extending its aerial mail service, the use of the native woods will be of great benefit.

Dr. W. E. Hiley, of Oxford University, has spent several months in Canada advising Price Brothers & Company in regard to fungus diseases and silviculture, and also paid a visit of inspection to the Laurentide Company. Dr. Hiley is also a specialist in silviculture methods, and his opinions in regard to conditions in Canada were very interesting, and his recommendations will be most helpful.

Sir Claude Hill, who was Director of the Indian Forest Service, and who is also a member of the Governing Council of the Empire Forestry Association, will be in Canada in October next. He is very much interested in extending the activities of the Empire Forestry Association, and will look over the forestry situation in Canada. At the last meeting of the Empire Forestry Conference held in London in 1920, it was voted to hold the next meeting in Canada in 1923. The members of the Conference in England were the guests of the British Government, and it would be necessary for the Canadian Government to act as hosts at the coming conference. However, as yet nothing definite has been announced, but it is hoped that the money will be forthcoming, as a conference meeting in this country would be of the greatest possible benefit, as the men who would attend it all stand at the top of their profession and their opinions on our local problems would be of great value. It would also help to advertise Canadian woods and help to extend their use in Empire markets.

#### FOREST EXPERT IN ALASKA

At the request of Secretary of Agriculture Wallace, Associate Forester E. A. Sherman of the Forest Service, left July 10 for a two months' trip through Alaska to make a field study of departmental problems. This will be Mr. Sherman's third inspection trip to the Territory.

Mr. Sherman was joined at Juneau by C. A. Flory, district forester in charge of the 20,000,000 acres of National Forests in Alaska. They go from Juneau to Val-

dez and travel by automobile to Fairbanks, where they will inspect the agricultural experiment station located nearby, and also the one at Matanuska. From Fairbanks they will travel over the new government railroad to Seward, and thence by steamer to Cordova, the headquarters of the Chugach National Forest. From there side trips will be made to the Prince William Sound region and to Katalla. An inspection trip will also be made from Ketchikan over the Tongass National Forest in southeastern Alaska.

Mr. Sherman will make a special study of the program of road construction in the National Forests of Alaska for which Congress has appropriated \$1,000,000, the possibilities of organized forest protection for the unreserved timberlands of interior Alaska, which have suffered severely from uncontrolled fires, and the relationship of the National Forests to the general industrial development of the territory.

#### BARNJUM PRIZES AWARDED

Prizes have been awarded in the \$1,000 Prize Essay contest on Practical Forestry offered by F. J. D. Barnjum as follows:

First prize: \$500 to P. Swanson, Timmins, Ontario.

Second prize: \$250 to M. Currie, Grand Mira South, Cape Breton.

Third prize: \$150 to Donald C. Oxley, Annidale, Queens County, New Brunswick.

Fourth prize: \$100 to R. M. Brown, Pincher Creek, Alberta.

"So many of these essays were of high order," writes Mr. Barnjum, "that the judges had a very difficult task in awarding these prizes, but inasmuch as the names and locations were detached from all essays before being submitted to the judges, the contestants have the assurance that no bias or favoritism entered into their decisions.

"All these prize essays will be published in the press from time to time so that the public may have the benefit of the suggestions and recommendations contained in these valuable contributions to the cause of forestry.

"The unsuccessful contestants can feel happy in the thought that even if they did not win a prize this time they have contributed to the welfare of their country by the valuable suggestions contained in their essays, and as our forests are our most valuable asset (for without trees civilization could not exist), they are helping to solve Canada's greatest problem.

"The success of this prize offering has been so pronounced that it is my intention to repeat this series of prizes in the immediate future and from time to time, also increasing the amount or value of the same."

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# Pleasant Things Taken from Letters to the Editor

"I have enjoyed Mr. Cheney's article in the July number, 'An Epic of the Great American Forest,' very much. I feel that every American child ought to be made familiar with that story."—*R. H. H. Blome.*

"With reference to the Book Service Department, I think the Association is to be congratulated on the many ways and the broad way in which it is making itself of service to its members and to the people at large."—*Darwin B. Buell.*

"*American Forestry* is a splendid magazine and much enjoyed."—*Mrs. J. B. Sorbeer.*

"Though we had to give up many of our long list of magazines, I have no intention of giving up *American Forestry*, for it is invaluable to all citizens. As long as I am able I want to help you to keep up the good work."—*W. A. Putnam.*

"I have seen several copies of your wonderful magazine and I feel that I need its counsel in connection with my Boy Scout work here."—*Rev. John J. H. Wilcock.*

"I enjoy the magazine and I receive lots of help from it in my studies at the University."—*George L. Dally.*

*American Forestry* is one of the greatest publications in America."—*Prof. Highsaw.*

"Your magazine is doing a great work, we enjoy every single copy of it."—*William J. Baxley, California.*

"Your magazine is well put up and is a good ornament for the Library, besides being most instructive."—*Walter J. Selle.*

"I am very much interested in the American Forestry Association and would like the best in the world to see a forestry association formed in Argansas, as we are greatly in need of one."—*Charles M. Connor.*

"I expect to take a great deal of enjoyment in your magazine and will send you members whenever possible."—*Norman T. Bourland.*

"There are too many good things in *American Forestry* to miss a single issue."—*Clement W. Baker.*

"The March issue is absolutely a treat to me, as it contains the best thing on logging mahogany I have seen. Only one who has seen the conditions in the tropical countries can appreciate this article in its real value."—*Joseph P. Smith.*

Cannot do without *American Forestry*."—*Elizabeth T. Owen.*

"The cover design of the magazine is so beautiful that I should like to congratulate the Editor on having found an artist who combines so much taste and skill with a keen appreciation of the characteristic features of his subject."—*Mary Woodman*

"Am well pleased with your magazine, and believe you do much good."—*William S. Kalbach.*

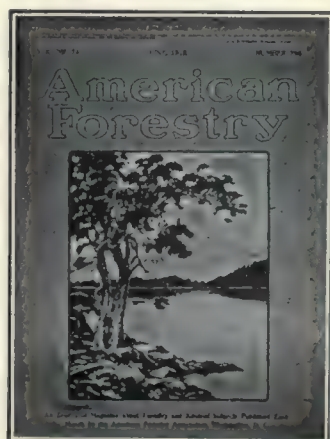
"I wish your charming magazine continued success and all good wishes for 1922."—*Mrs. J. F. Waggaman.*

"The magazine is unquestionably one of the most valuable published, and I want to see its work become more and more effective."—*Richard N. Johnson.*

## BECOME A MEMBER

Any person may become a member of the American Forestry Association upon application and payment of dues.

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Life Membership (no other dues) including Magazine.....	100.00
Annual Membership without Magazine.....	1.00

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## NEW JERSEY NEWS NOTES

The resignation of Alfred Gaskill as state forester of New Jersey on July 1 has caused a reorganization of the Forestry Division of the Department of Conservation and Development. C. P. Wilber, state firewarden, succeeds Mr. Gaskill as state forester and also retains his position as head of the Forest Fire Service. W. M. Baker has been appointed Associate State Forester; William Lindsay and Leonidas Coyle become deputy state firewardens; and A. D. LaMonte, assistant forester.

The report of a strike of forest fire fighters at Woodbine, New Jersey, which was given wide publicity in the daily press was found to be entirely groundless upon investigation by the state forester. It was apparent, however, that the local firewarden had been satisfied with too small a crew and as a result, the fire developed into a serious one.

The citizens of Woodbine are now considering organizing a forest fire company to extinguish woods and brush fires. If such a company is formed it will be the first of the kind in New Jersey so far as the Fire Service knows.

Two new lookout towers have been opened by the Forest Fire Service. One is on top of the huge naval airdome at Lakehurst, 212 feet above the ground, made possible through the cooperation of the U. S. Naval Air Service, and the other at the southern end of Kittatinny Mountain in North Jersey near Blairstown.

The spring forest fire season in New Jersey was so severe this year that the regular appropriation of \$10,000 for paying citizen fire fighters has proved inadequate. An additional sum of \$7,000 has been granted the Department of Conservation and Development by the State House Commission from the Emergency Fund to meet the deficit.

The department asked the legislature last year to give it an increased appropriation so that it could stop forest fires. The damage from these fires runs into many thousands of dollars and this, with the money spent for fighting them will far exceed the amount asked by the Department for the prevention or curtailing of fires.

## DESTROY BLACK CURRANTS

To help combat the spread of white pine blister rust, which now menaces western forests of five needle pine valued at \$228,000,000, the United States Department of Agriculture has just issued Department Circular 226, White-Pine Blister Rust in the Western United States. The circular describes the disease, its method of spread



The Gilliams Service.

## THE GRASS TREE. EVER HEAR OF IT?

You'd expect this chock-headed, tinker-looking tree to be a native of Ireland and rustle in brogue to the wind, but it is one of the tropical vegetation freaks scientifically known as *Xanthorhoea Treissu Tjibodas Preanger*, but better and more descriptively known as the Grass Tree. It seems to be a cross between the palm tree and the pine, but in reality it is a member of the palm family.

## American Forest Regulation

By Theodore S. Woolsey, Jr.

Limited edition, paper cover, \$2.75 net, \$3.00 postage prepaid (cloth, \$3.50); about 230 pages (6x9 inches).

A thoroughly Americanized discussion of the regulation of forests. Introduction by B. E. Fernow, LL. D.; 4 chapters by H. H. Chapman, Professor, Yale School of Forestry.

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## ATTENTION, FORESTERS!

AMERICAN FORESTRY will print, free of charge in this column, advertisements of foresters wanting positions, or of persons having employment to offer foresters. This privilege is also extended to foresters, lumbermen and woodsmen who want positions, or to persons having employment to offer such foresters, lumbermen or woodsmen.

## POSITIONS WANTED

"LAND OWNERS, are your holdings burdensome? Perhaps there is a better way of getting an income from them or turning them into cash than has yet occurred to you. It will cost you nothing to talk your troubles over with a LAND SPECIALIST, temporarily unemployed, with 25 years' experience at lumbering, forestry, farming and agricultural organization in the Northwest. Write description of location, topography, soil, etc., in reply." Box 4010, care AMERICAN FORESTRY MAGAZINE, Washington, D. C.

GRADUATE FORESTER—Experienced; eight years state forest management, four years nursery, landscape and horticultural work, desires connection with firm or individual interested in forests or nurseries for commercial purposes. Address Box 4020, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (6-8-22)

POSITION WANTED BY A TECHNICALLY TRAINED FORESTER at present employed as forest manager on one of the biggest private estates in Pennsylvania; 35 years experience. Can furnish the best reference. Address Box 4030, AMERICAN FORESTRY MAGAZINE, Washington, D. C. (6-9-22)

FORESTER, University Graduate; 28 years of age; ex-service man; several years' experience in the paper industry as an executive, also sales experience, desires position. Best references. Address Box 4040, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (7-9-22)

YOUNG MAN, 32 years old; married; graduate of Cornell University; B. S., 1914; M. F., 1915, with five years' experience in the United States Forest Service. Desires position as forester with a lumber company or private estate. The best of references. Address Box 4050, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (7-9-22)

FOREST ENGINEER, a graduate with eight years experience as chief of timberland department of large Eastern paper manufacturing company is open for position with company operating Eastern spruce lands. Address Box 4055, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (8-10-22)

GRADUATE FORESTER, at present employed by a Timber and Land Development Company, desires position as Forester or Superintendent on Private Estate, or in Park work. Experienced in Tree planting and Pruning, the handling of Shrubbery, Fire Protection and Logging operations. A willing worker as well as equipped to direct others. Box 4060, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (9-11-22)

FORESTER, with ten years' experience as technical assistant and forest supervisor, now in charge of western National Forest, desires to make connection with commercial organization with opportunity of improving present position. Address Box 4065, care AMERICAN FORESTRY MAGAZINE, Washington, D. C.

## WANTED

WANTED—FORESTERS AND RANGERS to act as District Superintendents and book orders for fruit and ornamental trees, evergreens, shrubs, etc. Pay weekly. Complete equipment. State territory desired. Full or part time. Address Box 3090, care AMERICAN FORESTRY MAGAZINE, Washington, D. C. (4-6-22)

FORESTERS, UNEMPLOYED OR EMPLOYED, having executive ability and possessing the gift to lead others, to write us. Great opportunity for those that qualify. State age, reference—(2) if employed. School graduated from (years). Confidential. Rangers also answer this. Address Box 66-66, AMERICAN FORESTRY MAGAZINE, Washington, D. C.



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## Bryant's Logging

The Principles and General Methods of Operation in the United States. By Ralph Clement Bryant, F.E., M.A., Manufacturers' Association, Professor of Lumbering, Yale University, 590 pages, 6 by 9. 133 figures. Cloth—net, \$4.50

A discussion at length of the chief facilities and methods for the movement of the timber from stump to manufacturing plant, especially logging railroads.

and tell how the people in that region can help safeguard the forests.

This pest was brought over from Europe about 20 years ago and is now established beyond hope of eradication in New England, New York and the Lake States. Lately it was discovered in western British Columbia and the Puget Sound region of Washington.

The disease attacks all white pines, i. e., those that bear their needles in bundles of five, but it can do so only after it has grown on the leaves of wild or cultivated currants or gooseberries. It cannot go directly from pine to pine. The rust can be controlled by destroying the currant and gooseberry bushes growing near white pines. The cultivated black currant is the most dangerous because it takes the disease more severely than the others and spreads it more rapidly. Its immediate destruction is the most effective means of preventing the blister rust from gaining a foothold in the western pine forests.

Federal quarantines have been established supplementing state quarantines, to prevent the introduction and spread of the blister rust in uninfected regions. They prohibit the movement of five-needle pine, currant and gooseberry plants into the United States from any foreign country, including Canada; prohibit their movement from all states east of and including Minnesota, Iowa, Missouri, Arkansas and Louisiana, to points outside the quarantined area; and prohibit their movement out of that part of Washington west of the summit of the Cascade Mountains.

The colored illustrations in the circular show the natural appearance of the disease. Persons who live in five-needle pine regions are urged to get the circular from the Department of Agriculture, Washington, D. C., and become familiar with the principal characteristics of the blister rust. Everyone can materially aid in the fight against this disease by examining the under side of the leaves of all currants and gooseberries in gardens, especially cultivated black currants and any native or planted white pines in your community. If the plants appear to be diseased in a manner similar to the colored illustrations in the circular, send the diseased material to the State Nursery Inspector or the Agricultural Experiment Station in your state, together with your name and address and particulars as to the location of the plants.

Each person has some responsibility in protecting the extensive forest resources of the west which contain about three-fourths of the white pine in the country, approximately 57 billion board feet. Nearly 25 per cent of the western white pine stumpage and 40 per cent of the sugar pine stumpage belongs to the Federal government. These pines are the most valuable forest trees in the west.

## NELSON BROWN DECORATED

Word has been received at the New York State College of Forestry that Nelson C. Brown, head of the Utilization Department has been decorated by the King of Italy for his services in connection with forestry work during the war.

Professor Brown left the college faculty in 1917 to investigate the effects of the war upon the lumber trade in Europe for the Department of Commerce. After a tour of all the principal lumber producing sections of the United States and Canada he spent approximately two years in Europe along the fighting fronts. He investigated forestry practice and the lumber industry in Great Britain, France, Belgium, Spain, Italy, Greece, Serbia and portions of northern Africa, and later Poland, Russia, Austria and Hungary. He also purchased lumber, railroad ties and other supplies in Spain for the United States army.

He then engaged in the domestic and foreign lumber trade for the American Woods Export Association. He has also been closely affiliated with the American Lumber Sales Company which took over the contract for the disposal of 135,000,000 feet of the surplus stock of the United States Shipping Board.

Professor Brown spent the winter of 1920 as consulting adviser to the Republic of Czecho Slovakia on the management and exploitation of the Hapsburg crown forests and returned as head of the Utilization department on the Forestry faculty last year. Professor Brown was graduated from the Yale Forest School in 1908. He is a director of the American Forestry Association.

## FORESTRY AT PENNSYLVANIA STATE COLLEGE

A large number of courses in forestry and lumbering will be given at the Pennsylvania State College during the coming school year, according to an announcement made recently at that institution. Under the Department of Forestry in the School of Agriculture, special courses will be given in silviculture, the care and protection of forests, making of timber to secure reproduction and to improve the growth and condition of the forest, logging and milling, forest law, forest economics and history, forest surveying, mensuration, seeding and planting, wood technology, administration, forest products, uses of lumber, marketing, tree identification and seasoning of wood.

During the last quarter of the senior year the lumber class will camp on a large timber tract in the South for the purpose of making plans. The freshman class will also attend a summer camp in The State Forest Preserves.



# AMERICAN FORESTRY<sup>577</sup>

THE MAGAZINE OF THE AMERICAN FORESTRY ASSOCIATION

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PERCIVAL SHELDON RIDSDALE, Editor

L. M. CROMELIN, Assistant Editor

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## CHANGE OF ADDRESS

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# "THE HALL OF FAME FOR TREES"

*Here is the first algaroba tree ever planted in the Hawaiian Islands and it is nominated for a place in the Hall of Fame by M. J. Riordan, of the Arizona Lumber and Timber Company, of Flagstaff, Arizona. The tree is on Fort Street, in*

*is a sign which reads: "First Algaroba Tree of the Hawaiian Islands, imported and planted in 1837 by Father Bachelot, founder of the R. C. Mission."*

*At the request of the Right Reverend Bishop Libert, the Rev. H. Valentine informed Mr. Riordan*



THE HAWAIIAN ALGAROBA

*Honolulu, in front of the cathedral. Mr. Riordan informs the Association there is a move on to destroy the tree to make way for a new building and he enters protest against this move because of the history connected with the tree. On the tree*

*that Father Bachelot brought a few of the seeds with him from southern California. From this tree the thousands in the Islands have their origin. Six of the original trees have been destroyed to make way for buildings and this is the only one remaining.*



## WEST PERSIA--THE WOOD-FAMINE COUNTRY

By Edward C. M. Richards

**W**EST PERSIA is now a land of famine, both food famine and timber famine, although the food famine attracts the most attention. Nevertheless the fact remains that the food famine is paralleled by a timber famine which is much more permanent and much harder to overcome. The news from West Persia for the past few years has been largely filled with the food needs of this ancient land, but for hundreds of years the fuel, timber and forest products famine has been always present and always a crying need to those who had eyes to see and ears to hear. But because West Persia is one

foot mountain range of Kurdistan which follows—on its eastern edge—an irregular line from Mount Ararat down to the Persian Gulf and which marks the boundry between Persia and Turkey. To the east the Caspian Sea lies several thousand feet below the level of the great plateau on which all of Persia stands. The province extends some two hundred miles south from the Persian-Caucasian boundry and is the most fertile and beautiful part of Persia.

To us here in America where there is such an abundance of wood and such a large variety of species of trees



SACRED ELM TREES OUTSIDE A MOSQUE. CAREFULLY GUARDED, THESE MAGNIFICENT TREES ARE A REMINDER OF THE LUXURY OF TREE GROWTH PREVALENT IN PERSIA IN THE DAYS OF HER GLORY BEFORE RECKLESS WASTE OF A FORMER GENERATION MADE HER PEOPLE OF TODAY SUFFER A WOOD FAMINE.

of the most out of the way places on earth little has been heard of it and practically nothing has come to us here in the way of information regarding the wood famine existing there.

By West Persia this article means the extreme north-west portion of Persia and includes that portion of the country known as the Province of Azerbaijan. This province lies directly south of the former Russian Province of Trans-Caucasia, or what is better known as the Southern Caucasus. To the West rises the great 13,000

it will be interesting and helpful to consider briefly some of the results of a timber famine so that the seriousness of forest devastation in a country may be better appreciated.

Take first the matter of fuel as one of the first necessities of all men. There are some low grade coal measures in West Persia but they have not been developed beyond the point where a man with a pick and shovel digs what he can out of a shallow hole in the grounds, and as the coal is full of sulphur and is very





A PERSIAN COBBLER "SAVING SOLES." PERSIAN SHOES ARE EITHER SEWED OR NAILED WITH WOODEN PEGS.

poor, this source of fuel does not enter into the fuel situation to any great extent. Crude petroleum and kerosene are available along the one line of railroad which runs from the Russian boundary to Tabriz, or when transported from the Caspian Sea ports by pack-train. The oil comes from the great Baku oil fields, but although the railroad engines are oil burners there is practically no oil used for fuel. Kerosene for lighting purposes is very common, the oil being carried many miles into the interior of the country on the backs of animals. The result of the lack of coal and the expense of oil is to throw the burden of furnishing heat for heating rooms, cooking and for industries, upon the forest products of the country, and owing to the destruction of the forests this burden is very heavy. This prob-



A PERSIAN "FLIVVER" LOADED WITH NATIVE FUEL—MOULDED MANURE CAKES.

lem is solved—or an attempt is made to solve it—by two methods. These two methods of securing heat are practically universal; the exception being in the case of the very few foreigners and the few wealthy people who have wood burning stoves and who are buying fruit wood for fuel, and both of these are of real interest so that some account of each method will not be amiss:

Charcoal is used by everybody to make his or her tea with—for everybody drinks tea several times a day, when they can get it. The Russian samovars in all sizes, shapes and materials are used in making them, the spherical brass type being the most common.

Practically everybody has some form of a samovar—as tea is looked upon as a necessity, and the consumption of charcoal for this purpose is large. Another use for charcoal is in cooking "kibobs" which are little pieces of meat broiled over a little brazier of hot char-



A PERSIAN THRESHING MACHINE IN ACTION. AS THE "SLED" IS PULLED FORWARD, THE CROSS STICKS WITH THE PROTRUDING KNIVES REVOLVE, CUTTING UP THE STRAW.

coal. This is a very popular dish and, in the streets and in the bazaar these kibobs may be bought at any time during the day. In the private homes also a good deal of cooking is done over charcoal. Then in cold weather charcoal is used in the "kursies." A kursie is about the cheapest arrangement for keeping the whole family warm. First of all a low table, perhaps two feet high and two feet or more square—is placed in the middle of the room. An earthen or iron pan or vessel with dirt in the bottom on which is a hot fire of charcoal is placed on the floor under the table. Then the entire family gathers around and sitting on the floor stick their feet under the table close to the panful of hot coals. A big quilt is put over the top of the table and falling down around the sides covers the entire family. In most of the houses there is no general system of heating and the houses are cold, so that the people are forced to sleep and practically live under "kursies" in



cold weather. The consumption of charcoal for fuel therefore is very great. Industrially also much charcoal is used. The black smiths, silver smiths, and other metal workers use it and taking it all in all charcoal is a most important forest product in West Persia. It is made in the villages and brought into towns and cities on donkey back.

To an American the use of charcoal as a fuel does not seem very primitive and one soon gets used to it. But it comes rather as a shock to see how almost anything and everything that will burn is "cast into the oven"—for that is the right term to use in describing the stoking



LOOKING DOWN ON AN UNPROTECTED PERSIAN VALLEY. THE EROSION HERE, FOLLOWING COMPLETE DENUDATION, IS VERY GREAT.

of the bake-oven of the country. In the fall the poor women go out into the fields and orchards and get permission to pick up the dead twigs, leaves, etc., and carry them away in bags. Then most of the manure is moulded into cakes, left to dry in the summer sun until firm enough, and then stacked carefully in big piles so plastered over

as to shed water, and so kept until the time comes to burn them. This practice of burning up all of the manure means a steady robbing of the soil and a steady deterioration of the quality of the agricultural land. This is a good illustration of direct effect of forest



A TYPICAL PERSIAN LANDSCAPE WITH A VILLAGE IN THE MIDDLE BACKGROUND. THE OUTLYING COUNTRY HAS BEEN STRIPPED BARE OF VEGETATION TO FURNISH THE NECESSITIES OF LIFE TO A WOOD-STARVED PEOPLE.





#### EVERYDAY LIFE IN PERSIA

*Upper*—The distribution of flour. Note the wooden bar to the scales and the wooden shovel. Close attention is given to the weigher.

*Middle*—A street scene. The donkey is loaded with thorn-bushes to be used for fuel.

*Lower*—Close-up of a threshing machine. The revolving cross-shaft holds the chisel-shaped iron knives that cut up the straw.

devastation upon agriculture and so upon the prosperity of a country. And this "native fuel" as manure cakes are called, is one of the chief fuels used in the bakeries, both public and private.

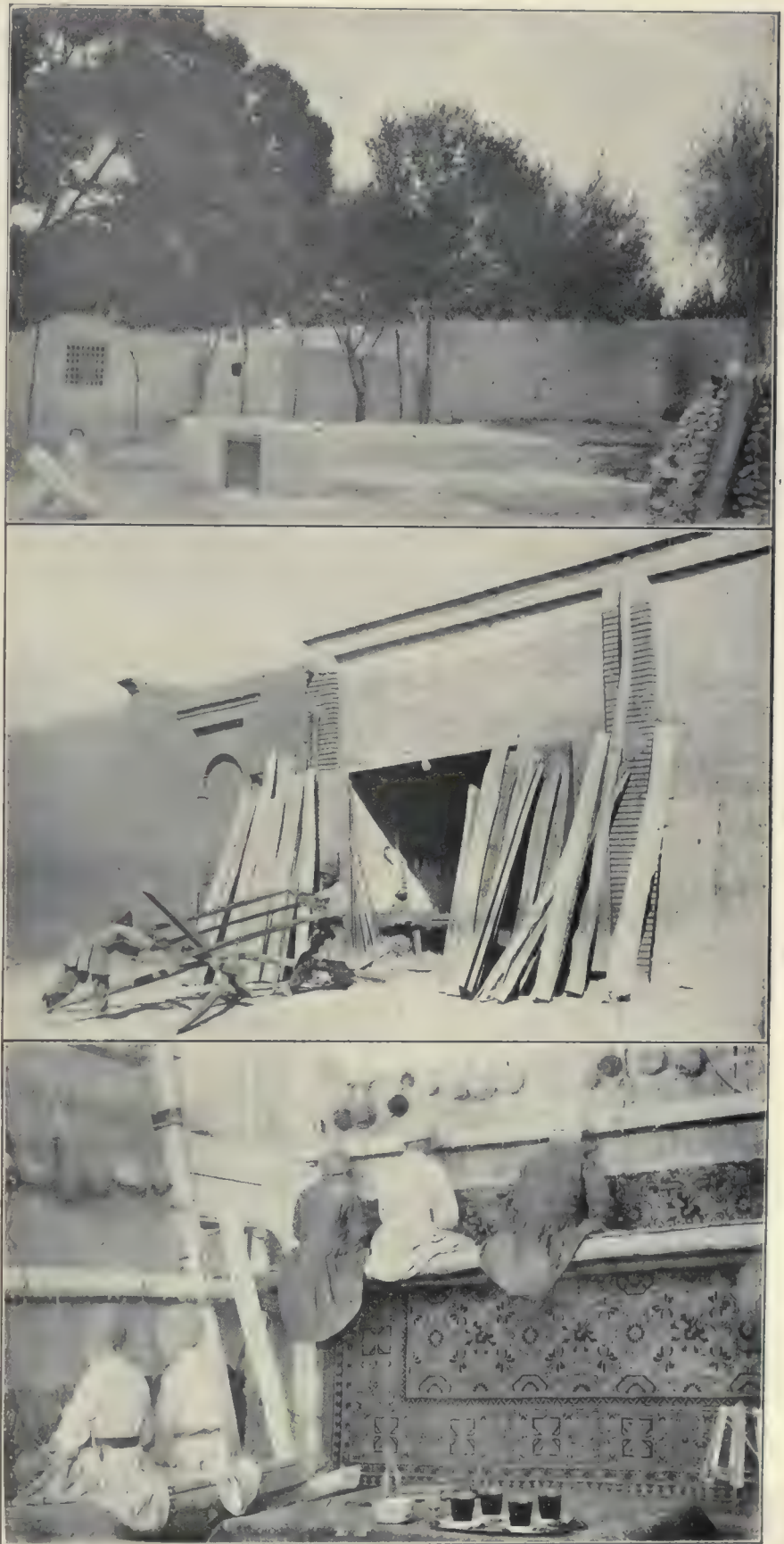
There is one great lesson to be learned from the fuel situation in West Persia, and that is the extreme to which the people of a country are forced to go when their forests have been destroyed. Everything in the way of fuel is burned up. The powdered charcoal in the bottom of the bags or containers is dampened and pressed together and used for fuel. The trees scarcely begin to shed their leaves before small boys shake them to hasten their fall or even climb up into the trees and pull the leaves off with their hands. Out in the country not a thing is left, in the way of fuel, except in very out of the way sections and in places where constant guardianship is exerted over the trees—or where some religious element protects trees from the wood-hungry people. And it is there that the absence of wood strikes one most. There are no fences, no woodlots worthy of the name, and the fact that the country is in a state of wood famine is constantly borne in upon the visitor. If the people of America could only spend a week traveling through West Persia there would be an entirely different degree of interest in the maintenance and enlargement of our forest resources here in this country.

Another use that wood is put to is in the construction of houses. But here again the wood famine stares us in the face. In the United States all of the cheap houses are made of wood of some sort, and in almost every type of building wood is used in some way. But in West Persia common adobe mud—used in bricks or in the mass—makes up most of the building material, wood being used only in the doors, windows and the framework of the roof. The covering of the roof is a thick layer of well pounded mud. In the winter, however, every fall of snow must be shoveled off at once, for



otherwise it would melt and ruin the roof. And every year, or at least once in two years, the roof has to be gone over, perhaps resurfaced and pounded. How much better it would be and how much safer and with how much of a saving in work every year, if the mountain cedar—one or two scattered specimens of which the writer found up in the wilder portions of the country—were systematically grown for shingle stock. This could be done and the housing conditions of the whole country could be revolutionized. And what a short-sighted policy on the part of the country—or of any country for that matter—to destroy the forests and then have to adopt some such clumsy, inefficient and dangerous method to use as a substitute for the wooden articles. Yet that is just what America is doing today, just as rapidly as it very well can be done.

The presence of wood famine is noticeable in the furnishing of the houses as well as in the houses themselves. For instance the floors are never of wood, not seldom, but *never*. In the poor houses the floor is just mud and in the better houses rough flat brick or a poor sort of mixture of mud, clay and lime, called "native cement" takes its place. The result is that the floors are cold, hard and damp. The doors are usually made of poplar lumber which has been badly sawn and badly seasoned. All of the sawing is done by hand in "pit saws" where one man stands on top of the log and one man stands in a pit underneath it, as they saw the planks out of the timber. The result is that the doors are apt to warp, check and crack so that in a short time seams open up and the door is spoiled. As for the furniture fully 99/100 of the population never sleep in any kind of a bedstead during their lives. Instead, rugs are spread on the floor and then with thin mattresses and wool quilts and pillows the bed is made up. In fact it is only in the large cities and in the homes of the very wealthy people and among those few who have been out of the country and



#### PERSIAN INDUSTRIES

- Upper*—A Persian flour mill. Note the tree trunk set in the pile of staves to the right. This is hollow and carries the water down to the waterwheel below.  
*Middle*—Ripsawing poplar lumber in a Persian carpenter's shop.  
*Lower*—A Persian rug loom. The boys sing as they work. Note the wooden thread winder in the right background.





WOODEN SHUTTERS ON THE SHOP OF A PERSIAN BAKER. THE MAN ON THE EXTREME RIGHT IS LEAVING THE SHOP WITH A LARGE PIECE OF BREAD IN HIS HAND AND A PILE OF THORN-BUSH—TYPICAL FUEL—IS ON THE GROUND OUTSIDE.

have seen western methods that any sort of furniture is used at all. The people sit on the floor, eat off the floor, put their things in bags, or if they have seen something of western ways, in some sort of cheap chests, or perhaps some poor European trunk. Sometimes there will be a large grain box to keep their grain in, and perhaps a small box to keep their weekly supply of baked bread in, and these will be the only articles of furniture in the homes of literally thousands of people. And the reason is that wood is so expensive, and of such poor



A TYPICAL PERSIAN STREET IN A LARGE CITY. NOTE THE SMALL AMOUNT OF WOOD USED IN THE HOUSES.

quality and of such small size that the people have to get along without using it. To an American a home without any closets, any bureaus, any cupboards, any tables, any chairs, beds, lounges or desks seems impossible. But this is not exaggeration. It is a cold fact. And the cause behind the fact is *wood scarcity*. And forest devastation brought this wood scarcity upon West Persia.

Fuel, house construction, house furnishings—these are the chief uses that wood is put to in West Persia. To a person interested in the problem, however, other uses are made of wood as well, but on a much smaller scale.



A TYPE OF PRESENT DAY PERSIA—A REFUGEE KURD. HIS PIPE STEM IS MADE OF CHERRY WOOD.

The looms on which the native cloth is woven and on which the famous Persian rugs are made are mostly made of wood, but these looms last a lifetime so that there is little consumption there. Straight sticks of cherry are used for pipe stems and cigarette holders, the holes being bored for you while you wait by the keeper of the little shop in the bazaar. The upright stem and the mouth pieces of the "hubble bubble" water pipes are of turned wood. The cobblers use wooden shoepegs, and the saddlers use wood for their trees.





A TILLER OF THE SOIL PAUSES TO PERMIT THE MAKING OF A PICTURE OF A TYPICAL PERSIAN PLOUGH.

Out in the country the trunks of the willows are sometimes hollowed out and used as chutes to guide the little streams down to the paddles of the water wheels which grind the flour for the region. The water wheels are of wood also. The snow shovels used to clear off the roofs with, and the shovels and forks used in handling the grain upon the threshing floor are of wood. The ploughs and harrows, and the machine used to thresh out the grain—being dragged about over the threshing floor by oxen or horses, a small boy being used as a weight—these are other minor ways in which wood is used. Then in the shops and in the bazaar the shutters which are folded and locked up every night are of popular lumber, as are the frameworks supporting them.

The conditions of life in West Persia stated in this article are not the conditions of fifty years ago. They are as they exist today, in 1922. To an American it seems as if these people must have been lost in the ignorance and backwardness of the men of the stone age until early in this century. But when our ancestors were running about in skins with stone hatchets and spears, Darius, the Persian, was the Great King of the then known world, and the Persian civilization was "the" thing, and the Persian people of that time had excellent reasons to expect that the world would always see Persia and Persian civilization at the head of it. The United States has existed now for less than 150 years. During that time we have taken the example of Persia in regard to the treatment of our forest resources for the most part, and are using them up now just as rapidly as we can do so, regardless of everything but the immediate present and the immediate profit. Three thousand years from today—no, three hundred years from now—what will be the judgment

of our children's children and of that generation? Today America is a great and rich and powerful nation. So were the countries of Assyria, Babylonia and Persia in their prime. And today they do not exist at all or are "backward" in every way. It is important for us to consider these things if we truly love our country. And what we do now with our forests has a tremendous effect on what America will be in the days to come.

#### HOW BIG IS A BIG TREE?

Park Naturalist Ansel F. Hall, of Yosemite National Park, has prepared this section of a giant sequoia, which was felled by a storm in 1919, to show visitors how huge and how old Yosemite's trees are. This tree was comparatively small—only 14 feet in



diameter at the base and nine feet at a point sixty feet above the base, where this section was cut; Yosemite has one tree that is 29.6 feet in diameter and many that are more than 20 feet. This tree also was comparatively young, only 996 years old; as compared to 4,000 years, the estimated age of Grizzly Giant, largest tree in Yosemite.

The chalk rings on the tree indicate the years in which important historical events took place—Battle of Hastings, Discovery of America, Declaration of Independence, etc. The space between the Naturalist's forefinger and thumb measures the span of a long human life to compare with the span of this tree's life.



# THE WHITE OAKS

By Joseph S. Illick

**T**HE oaks are world famous. For many centuries they helped civilized man in his conquests and industrial enterprises. The ancients worshipped the mighty oak and Socrates looked upon it as the "tree of knowledge." The history and literature of England is closely associated with the oak tree. The early Britons and later conquerors held it in high regard. In America, the Charter Oak holds a prominent place in our colonial history.

There are many majestic memorial oaks in the eastern states under whose sturdy branches took place some of the great historic events of our early national history. Among them is the "Witness Tree" still standing before the Donegal Presbyterian church, in Lancaster county, Pennsylvania, under whose spreading branches the members swore allegiance to our country in June, 1777.

Every woodsman and forester loves the Oaks. They are admired for their physical sturdiness, great age, and the high value of their wood. They are attractive at all seasons of the year, whether in the first pale dress of spring tinged with delicate pink, the deeper tones of summer, the rich purple, scarlet or red of autumn, or the dull brown of Indian summer. Perhaps the oaks are most impressive and picturesque in winter when their

mighty branches stand out boldly against the sky. No other group of trees have such a commanding appearance.

Most of the oaks attain a great age and reach a large size. Some European oaks are believed to be 1,000 years old, and a few American specimens are known to exceed 500 years. The real merit of the oaks is in the excellent wood that they produce. It has a wide range of commercial uses, and holds a prominent place in almost every American wood-using industry.

The nuts and the bark of some oaks also have considerable commercial value. The Indians, and the early white settlers, used the white oak acorns for food. During the world war all the seeds produced by the oaks, beech and chestnut of continental Europe and Great Britain were used by man. They furnished much-needed food for man and domestic animals. In the olden days the fattening of hogs on fallen acorns and beech nuts was an established practice. In some forests as many as 20,000 hogs were fattened every year.

The bark of some oaks is rich in tannin while that of others yields valuable dye material. The bark of the Rock or Chestnut Oak is harvested annually in large quantities. It is rich in tannin, which is manufactured



THIS MIGHTY WHITE OAK STANDS ALONG THE BRANDYWINE CREEK IN PENNSYLVANIA. IT IS 25 FEET IN CIRCUMFERENCE AT THE GROUND, 80 FEET HIGH, AND HAS A BRANCH SPREAD OF 107 FEET.





THE BARK OF THE WHITE OAK BREAKS UP INTO LONG PLATE-LIKE SCALES.

into tannic acid and used in the preparation of leather. The inner bark of the black oak contains a yellow dye material that is used locally in the preparation of various cloths, particularly khaki. Large quantities of this bark were harvested during the world war, and helped to relieve the great shortage in domestic raw dye materials felt so keenly in many industries.

The oaks satisfy many of man's essential needs. They have been a big factor in our national growth, and worth while efforts should be put forth to maintain a worthy place for them in our future forests. A large part of man's high regard for the oaks is due to their great number and wide distribution. There are more than 300 different kinds of oak trees in the world. The center of their distribution is in Central America and Mexico, but they are widely distributed in temperate regions. Of the 300 spe-

cies of oak that are known in the world, 55 are native to North America, and as many as 20 different oaks are known to occur in a single eastern state. In addition to the 300 recognized species of oak, there exist an almost endless number of hybrids and varieties. The different oak trees show such a wide range of characteristics that the following three groups are now recognized:

### I. WHITE OAKS

They mature their acorns in one season and have leaves with rounded lobes. The kernels of the nuts are usually sweet. They are sometimes called *Annual Oaks*, because they mature their acorns in a single season.

### II. BLACK OAKS

They mature their acorns in two seasons, and have bristle-pointed leaf lobes. The kernel of the nuts is usu-



THE LARGE, LEATHERY, SQUARISH LOBED LEAVES OF THE POST OAK ARE DISTINCTIVE. THE THREE TERMINAL LOBES ARE THE LARGEST. THE TWIGGS AND LOWER LEAF-SURFACES ARE COVERED WITH RUSTY HAIRS.

ally bitter. They are sometimes called *Biennial Oaks*, because it takes two seasons for their acorns to mature.

### III. LIVE OAKS

They retain their leaves two or three seasons, while all other oaks shed their leaves annually. *Evergreen Oaks* is another name for this group.

Some of the most important timber trees of the world belong to the white oaks. Representatives of this group are found in every part of the United States, and among them are

some of the best forest trees of continental Europe and Great Britain. The most important American members are:

COMMON NAME	SCIENTIFIC NAME
1. White Oak	<i>Quercus alba</i>
2. Swamp White Oak	<i>Quercus bicolor</i>
3. Bur Oak	<i>Quercus macrocarpa</i>
4. Post Oak	<i>Quercus minor</i>
5. Chestnut Oak	<i>Quercus Prinus</i>
6. Yellow Oak	<i>Quercus Muhlenbergii</i>
7. Valley Oak	<i>Quercus lobata</i>
8. Garry Oak	<i>Quercus garryana</i>

The White Oak is the most important hardwood tree in eastern North America. It usually has a tall, broad and round-top crown. It may reach a height of 150 feet and occasional trees attain an age of 500 years. It prefers rich and moist situations, but will grow on almost every kind of soil found within its natural range from Maine to Minnesota and south to Florida.

In summer the White Oak can be distinguished by its loose scaly, grayish bark and by its deeply rounded-lobed leaves. The leaves of all members of the Black Oak group are bristle-tipped and the other members of the White Oak group have leaves with shallow indentations on the margin or else they differ from the true White Oak in outline and texture. In winter the White Oak can be distinguished by its slender, small reddish brown pointed buds. These characteristics should enable any one to recognize this important forest tree which is so common in our for-



IMMATURE AND MATURE WHITE OAK LEAVES ARE DISTINCTIVE. IT IS NOT UNUSUAL FOR THE WHITE OAK TO PLACE ITS SEASON'S GROWTH IN TWO INSTALLMENTS.





THE SWAMP WHITE OAK HAS A DEEPLY AND REGULARLY FURROWED BARK.

ests and woodlot, and promises to play a big role in the forests of the future.

The wood of white oak holds first place among our native oaks. It is ashy-gray in color, closely grained, hard, tough, durable, and weighs about 46 pounds per cubic foot. No other wood has so wide a range of uses and satisfies so many human wants.

The Swamp White Oak has an appropriate common name, for it is truly a white oak and usually occurs in swamps or other wet places. It is an average-sized tree, usually attaining a height of 60 to 70 feet, but an occasional specimen may reach a height of 100 feet and a diameter of 3 feet. The famous "Wadsworth Oak" was a Swamp White Oak. It took its name from the estate upon which it grew and reached a circumference of 27 feet. For many years it stood on the bank of the Genesee River, about one mile from the village of Genesee, New York. A large number of people traveled many miles to see this natural wonder which finally was destroyed by the washing away of the river bank.

The Swamp White Oak can be distinguished from other oaks at any season of the year by the bark on the younger branches which peels off in thin large flakes. This characteristic is also common to the Buttonwood or Sycamore. In summer it can be recognized by the leaves which have very shallow indentations between the lobes, giving the leaves a rather broad appearance. In fall the long-stalked acorns with their cups enclosing about one-third of the nut, are also characteristic. In winter the

rather stout-yellowish to reddish-brown twigs and the small blunt-pointed buds, covered with chestnut brown scales, are distinctive. The irregular, often drooping position of the lower branches is quite peculiar to this tree, and may often help to recognize it.

The Swamp White Oak occurs naturally from Maine and Quebec to Michigan and south to Georgia and Arkansas. It may be classified as an important timber tree, but does not rank so high as the true white oak. Its lateral branches have a tendency to persist for many years. This results in an inferior grade of lumber. It possesses no special ornamental qualities which recommend it for landscape work, but it will continue to be an important member of the future forest structure in wet places.

The Post Oak is a well-known and widely distributed member of the white oak group. It reaches its best development in the Mississippi Valley, but it is also of commercial importance in other parts of its natural range from Massachusetts and Central Pennsylvania to Kansas, Florida and Texas. It usually occurs on dry, rocky soil, but it is not unusual to find it on gravelly uplands, sandy plains and limestone hills.

It is easy to recognize the Post Oak in summer by its



THE BUR OR MOSSY CUP OAK HAS MOSSY FRINGED ACORN CUPS, CORKY-WINGED TWIGS, AND LARGE, ROUND-LOBED LEAVES.



peculiar leaf form, the lobes of which are rounded or square. The three terminal lobes of the leaves are the largest and the basal lobes taken together are wedge-shaped. These unusual features give the leaves a distinctive appearance. The rigid leathery texture of the leaves and their shiny green upper surface and their rusty lower surface, are also helpful in recognizing the Post Oak. If one examines the lower leaf surface with a magnifying glass it will show star-shaped rusty hairs over the entire surface.

In winter the Post Oak may be recognized by its short blunt-pointed buds and its stout, rusty and hairy twigs. The buds are about the same size as those of the white oak, but they are bright-reddish in color.

In the northern part of its range the Post Oak is usually a small tree, but in the lower Mississippi Valley, where it reaches its best development, it sometimes becomes 90 feet high and 4 feet in diameter. Locally in the Mississippi Valley it is the commonest member in the oak forests. The wood is firm and very hard, which may have given it the name "iron oak." It decays slowly when placed in contact with soil which accounts for its extensive use for fence posts, and presumably this is the reason why it has the common name "Post Oak."

No oak has more striking distinguishing characteristics than the Bur Oak, which is one of the largest of



A BIG BUR OAK WHICH IS 24 FEET IN CIRCUMFERENCE AT THE GROUND, AND OVER 200 YEARS OLD.



THE CHESTNUT OAK MAY BE RECOGNIZED BY ITS DISTINCTIVE CHESTNUT-LIKE LEAVES, LONG-POINTED BUDS, AND LARGE ACORNS.

our native oaks. It is also called "Mossy Cup Oak," for the acorns are fringed along the margin to such an extent that they give an appearance of moss. The acorn cups are unquestionably the most unique of all oak acorn cups. Some of the thrifty bur oak trees in the Mississippi Valley develop such large acorn cups that they are called "bird nest" cups. This appropriate name was given to them for they resemble bird nests in size, form and general appearance.

The leaves of the Bur Oak are usually as distinctive and unique as the acorn cups. On each side and near the middle of the leaves occurs a deep-rounded cleft which extends almost to the mid-rib, and practically divides the leaves in two parts. The terminal part of the leaves has large square lobes and the basal part resembles a triangle. The twigs are fully as distinctive as the acorn cups and the leaves. Upon them are found corky winged projections which stand out from the twigs for an inch or more. This characteristic is found in only a few other trees, such as cork elm and sweet gum.



The Bur Oak is one of the largest of the American oaks. It is usually from 70 to 80 feet high, but a few specimens have been reported that reached 170 feet in height and 6 to 7 feet in diameter. It usually occurs in low, rich bottom lands from Nova



THE SHARP-POINTED LEAVES AND THE SMALL STALKLESS ACORNS ARE HELPFUL IN RECOGNIZING THE YELLOW OAK.

Scotia to Manitoba, south to Pennsylvania, Kansas and Texas. This tree has not only a wide distribution and attains a large size, but it also produces very valuable wood, and is planted rather extensively for ornamental and shade purposes. It is easy to transplant, grows fast, develops an attractive form, has few insect enemies, and withstands smoke better than most of the oaks.

The Chestnut Oak or Rock Oak is an important member of the White Oak group. The name Chestnut Oak was given to this tree because its leaves resemble those of the common chestnut, which enables one to recognize it with little difficulty. This tree is also called Rock Oak. This name refers to the hardness of the wood, and is confined to this tree alone for the adjective "rock" is a part of the common names of a number of trees that produce hard wood. Sometimes the adjective "iron" is substituted for "rock" as in the case of Ironwood. The name Tanbark Oak is also locally applied to this tree because its bark is harvested in large quantities for

tanning purposes. Locally it is also called Mountain Oak, because it is usually found on mountain sides and hilltops.

The Chestnut Oak may be distinguished at any season of the year by its bark. On young stems it is smooth, thin and yellowish-brown. On old trunks it is thick, brown to black and very deeply furrowed. The bark ridges are solid, not scaly, and are separated by deep and sharp-angled furrows. The bottom of the furrows is often cinnamon red in color, which enables one to distinguish it from any other oak. In winter the Chestnut



THE BARK OF THE CHESTNUT OR ROCK OAK IS DEEPLY FURROWED.

Oak can be distinguished by its slender, angular, orange-brown twigs and by its sharp-pointed buds about one-fourth to one-half inch long, which are clustered at the ends of the twigs.

The Chestnut Oak occurs on dry hillsides and moist fertile foot hills from Maine to Ontario and south to Alabama and Tennessee. It is an important forest tree, for it grows rapidly, produces valuable wood, and yields bark which is rich in tannin. It usually grows to a height of 60 to 70 feet and sometimes reaches 100 feet with a diameter of 2 to 5 feet. This tree is a big factor in replacing the chestnut that has been killed on so large a scale by the blight. The killing of the chestnut left large vacan-

cies which have since been filled up by thrifty clumps of rock oak. Given a chance, the Rock Oak will grow rapidly and produce valuable wood. As soon as the real merits of this tree become known it will be given a prominent place in the forest practice of the eastern states.

An oak closely related to the Chestnut Oak is the Yellow Oak. It is also called Chinquapin Oak, Scrub Oak, Dwarf Chestnut Oak, and Pin Oak. It should not be confused with the true Chestnut Oak, for it has distinctive features, grows on different soil, and is of less commercial importance. It can be distinguished from the true Chestnut Oak by its small acorns, which are usually sessile. The buds are smaller and the leaves more sharp-pointed than those of the true Chestnut Oak. The flaky gray bark is also distinctive. The Yellow Oak occurs commonly on limestone soil, but is often found on dry ridges from Vermont to Minnesota and south to Florida and Texas. It is a beautiful tree and should be planted extensively in parks and



THE SWAMP WHITE OAK CAN ALWAYS BE RECOGNIZED BY ITS LONG-STALKED ACORNS, AND ITS LARGE, SHALLOW-LOBED LEAVES.

lawns on account of its handsome form and attractive foliage.

Of the more than 55 oaks found in the United States, 14 inhabit the Pacific Coast region. Some of them are





A BIG WHITE OAK WHICH AT THE GROUND HAS A CIRCUMFERENCE OF 31 FEET. IT STANDS NEAR KUTZTOWN, PENNSYLVANIA, AND IT IS REPORTED THAT AN AMMUNITION TRAIN OF THE CONTINENTAL ARMY CAMPED UNDER THIS TREE ABOUT THE TIME OF THE BATTLE OF GERMANTOWN.

representatives of the White Oak group, while others belong to the Black Oak and Live Oak groups. The two principal members of the White Oak group are:

COMMON NAME	SCIENTIFIC NAME
1. Valley Oak	<i>Quercus lobata</i>
2. Garry Oak	<i>Quercus garryana</i>

The Valley Oak is so called because it grows chiefly in valleys. It is the largest of all the western oaks and usually reaches a height of 60 to 75 feet, but occasional specimens become 100 feet high and 30 to 40 inches in diameter. The leaves are deep green, minutely hairy on top and round-lobed, the latter being a characteristic of white oaks. The acorns mature in one season, and are produced in large quantities. In some localities they are fed to swine in lieu of grain.

It is not unusual to find specimens of Valley Oak with huge trunks bearing large, round, and broad crowns, the lower branches of which are often drooping. Its wood is prized highly, for native hardwood timber is scarce on the Pacific Coast.

Next to the Valley Oak, the Garry Oak, commonly known as White Oak, is the largest oak of the Pacific Coast region. The name "Garry Oak" was given to the tree by David Douglas in honor of Nicholas Garry, of the Hudson Bay Company, who furnished valuable assistance to the botanists and other explorers of early

times in northwestern America.

This tree reaches its best development in the neighborhood of Puget Sound, where it becomes 50 to 90 feet high, and 18 to 30 inches in diameter. It is sometimes called Western White Oak in contrast with the well-known eastern White Oak. This tree, however, bears more resemblance to our eastern Post Oak than to the white oak, and for this reason has also been named Pacific Post Oak. It may be recognized by its mature leaves which are thick, deep green and shiny. They are from  $3\frac{1}{2}$  to 6 inches long and distinctively round-lobed. The twigs are also conspicuously hairy.

This oak is one of the most important hardwoods of the far northwest. The wood is not so good in quality as the eastern white oak, but it is in great demand in the northwest, where few hardwood trees grow. The scarcity of wood suitable for tight cooperage along the Pacific Coast makes this wood in great demand, and the tree will unquestionably be given a prominent place in the future forests of Oregon and adjoining states.

The oak plays a more important part in European history than any other group of trees. The most important of them belong to the White Oak group. In England the oak is looked upon as the monarch of the forest. It is the boast and glory of the whole nation.





A TRIO OF BIG WHITE OAKS STANDING BEFORE THE BRANDY WINE BAPTIST CHURCH NEAR CHADD'S FORD, DELAWARE COUNTY, PENNSYLVANIA. EACH OF THE GIANT TREES IS OVER 13 FEET IN CIRCUMFERENCE AT BREAST-HIGH.

The Cowthorp Oak in Yorkshire, when measured in 1768, was found to be 40 feet and 6 inches in circumference at 4 feet from the ground. The Bentley Oak, measured in 1759 was 34 feet in circumference 7 feet from the ground. The Boddington Oak that grew in the vale of Glouchester, measured 42 feet in circumference

at 3 feet from the ground. Today the oaks of the Windsor forest are famous all over the world. The Spessart oaks of Bavaria in Continental Europe are famous among all the foresters of every civilized land. Some of the trees still standing are estimated to be more than 350 years old and the wood cut from a number of these sylvan giants sold for \$575.00 per thousand board feet.

## SUBMIT YOUR NOMINATIONS

The By-laws of the American Forestry Association give all of its members the right to participate in the nomination of officers. The Committee on Elections is anxious that this privilege be fully exercised in the forthcoming election. It invites recommendations from the members of the Association in every state as to men well qualified for leadership in the work of the Association, for its guidance in drafting its own nominations. And any nominee endorsed by 25 members of the Association goes on the ballot automatically. The officers of the Association are not to be selected behind closed doors but by the fullest possible participation of all the members of the Association which the Committee on Elections can secure.

We are to elect this winter three Directors for five-year terms, vice Messrs. Drinker, Quincy and Lyman,

and another Director for one year to complete the unexpired term of Mr. John Hays Hammond.

We also elect a President, Treasurer, and twenty-one Vice-Presidents for a term of one year.

The Association is facing a period of special responsibility and opportunity, and needs the best thought and active help of its own membership in the election of these officers.

Take a part in it. Send your nominations, either individual nominations or group endorsements, to me or to the Secretary of the Association not later than November first.

W. B. GREELEY,  
Chairman.

## THE COMMITTEE ON ELECTIONS

The Board of Directors of the American Forestry Association at a meeting in New York City on September 19, appointed the following Committee on Elections: Col.

W. B. Greeley, United States Forest Service, Washington, D. C.; Philip W. Ayres, 4 Joy street, Boston, Massachusetts, and R. S. Kellogg, 342 Madison avenue, New York.



# STATE FORESTERS IN MINNESOTA

By Ovid M. Butler

Forester, The American Forestry Association

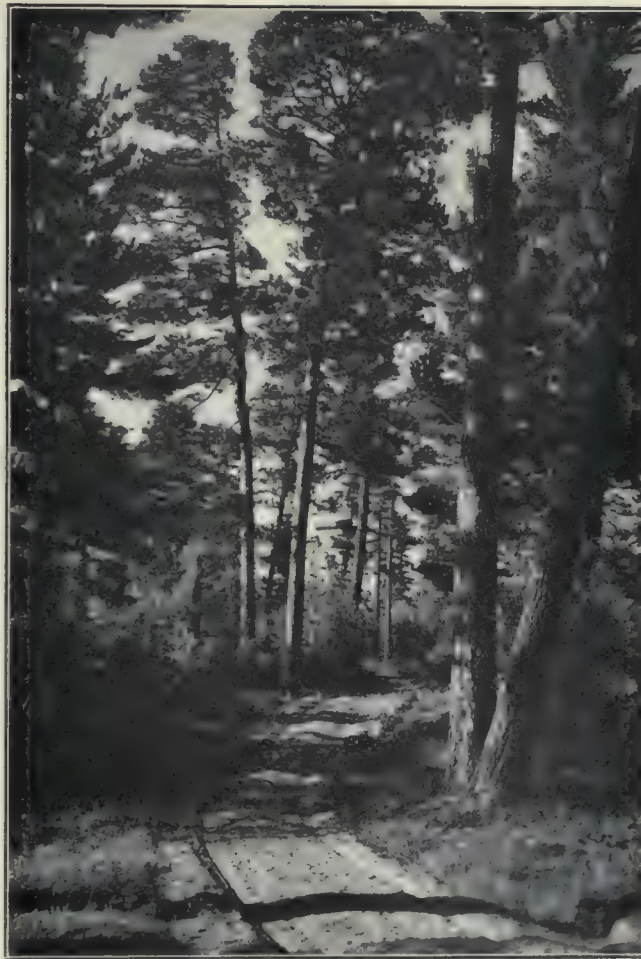
**F**ORESTERS from different parts of the United States and Canada invaded the state of Minnesota in August. The occasion was the third annual gathering of the Association of State Foresters. During practically every daylight hour from August 8 to August 14, the members of the party, which numbered about thirty, were on the move, covering in all some five hundred miles by land and water routes through the northern section of the state. The object of the trip was to acquaint the visiting foresters with some of Minnesota's larger forest problems and to show them on the ground the manner in which the state is conducting its forest work.

Assembling at Bemidji, the party was taken by autos to Itasca State Park and Forest, "the source of the father of waters," for it is there in the small but beautiful Lake Itasca, which the early Indians knew as Lake La Biche (Elk), that our mightiest of rivers has its beginning. Itasca State Park and Forest embraces 32,000 acres, of which 6,000 are water. It was established in 1891 by Congress and the Minnesota legislature to protect the source of the Mississippi River and to preserve a portion of the primeval forest along with its game. Although most of the foresters on the preceding day had traveled from Duluth westward half way across the state, their first view of a real virgin forest was when they came to the protected shores of Lake Itasca. This wooded spot, which is both a game refuge and a protected forest, was the source of diversified interest to the foresters. Here they beheld the Norway pine in its virgin growth and on other portions of the tract, they were able to observe the luxuriant regrowth which under adequate fire protection is following the cutting of the older timber. For, some of the area has been cut over. It appears that when the legislature "grudgingly and only after a bitter struggle," passed the law, creating the park, it refused to ap-

propriate money with which to buy the primeval forest. As a result some of the hills around Lake Itasca itself were stripped of their timber before public sentiment became sufficiently aroused to force the legislature to make adequate provisions for the protection and management of the forests.

After traveling mile after mile through barren cut-over and burned-over pine land—a prairie of scrub growth and charred snags, to which the traveler sought to close his eyes—the effects of forest management and

fire protection are most striking as one enters Itasca Forest. It is a tract of wild forest, dotted with more than a hundred lakes. Its every acre of land is producing a crop of timber while at the same time it is the haven and breeding place of deer, mink, muskrat, beaver, porcupine, loon and wild duck. In addition to that, it is rapidly becoming the chief recreational point of the state for summer tourists, being visited every summer by thousands of people, who stay at the great log lodge at the head of Lake Itasca, or camp along the eastern shore where the state has provided camp grounds. Toward the lower end of the lake, the School of Forestry of the state university has its summer camp and nursery. All in all, it is an object lesson in forest protection which any one whose eye has beheld the seemingly limitless stretches of cut-over and fire-pocked land which characterizes much of



THE WOODS, ITASCA STATE FOREST, OWNED BY THE PEOPLE OF MINNESOTA.

northern Minnesota, can not fail to take to heart.

From Itasca Forest, the band of foresters, on the following day, visited the Minnesota National Forest, traveling some fifty miles within its boundaries and observing the extent to which the early cuttings made here under Government regulations have been successful. Where fire has been kept out and seed trees left, luxuriant regrowth was everywhere apparent, the Norway pine reproducing itself, with hardwoods coming in prolifically



on the white pine lands. The foresters were especially interested in these cut-over lands for two reasons, first, here were made some of the earliest cuttings on an extensive scale where the lumbermen were required to leave seed trees as natural replanters of the forest, and secondly, it has recently been charged by certain opponents of the forest, who are seeking to have it abolished through political pressure and otherwise, that the government's efforts and methods to bring about natural regeneration has failed. It has also been charged that the artificial planting done by the Government has been a failure. Such representations have been made to members of Congress. After seeing conditions on the ground, there appeared to be no doubt in the minds of the visiting foresters as to the falseness of these charges. The accompanying photographs are typical of what the Forest Service is accomplishing in the way of keeping these sandy lands growing forests.

It was not until the completion of their trip, however, and after they had gained some idea of the extent of cut-over and devastated forest land in northern Minnesota, that the foresters grasped in its full significance the value of the Minnesota National Forest to the state and the entire Mississippi valley. With millions of acres of as good and usually much better agricultural land adjacent to the forest going begging, the claim that the land is needed for agriculture appeals to the fair mind as both specious and preposterous in the face of the overwhelming and ever increasing accumulation of cut-over and unimproved land and the rapid and serious shrinkage of forest and recreational areas in Minnesota. The opinion of the state foresters was expressed in a special resolution, which is printed in full in the editorial section of this issue of American Forestry.

The night of the second day was spent at Lake Winniebegoshish and on the third day the party moved northward by autos and a "special" logging train provided by the International Lumber Company, arriving at International Falls in the evening. An opportunity was thus

afforded to pass through the muskeg country of spruce and tamarack, much of which likewise bore the pockmarks of a cut-over and burned-over waste. The striking observation of the day, however, was the fact that where these great stretches of inhospitable land, after being cut over, have escaped fire, a green carpet of spruce, balsam and tamarack is well established.

After a trip through the paper mills of the Ontario and Minnesota Paper Company at International Falls, the foresters left the following day, traveling by boat through the beautiful Rainy Lakes. Arriving at Harding about five o'clock, automobiles transported them the remaining eighty miles to Hibbing, where a midnight

banquet, given under the auspices of the Hibbing Commercial Club, awaited them. The next morning a visit was made to the greatest open pit mining district in the world, which only a few years ago was a solid belt of pine timber, much of which was bartered away for fifty cents and a dollar an acre. By noon of the same day the party was in Cloquet, eating dinner under the pines of the state forest experiment station. The afternoon was devoted to observing the work of this station and to visiting the wood-conversion plants of the town. That evening the meeting adjourned at Duluth.

Of the many definite impressions left upon the minds of the visiting foresters, probably the most common was the small amount of merchantable timber and the large extent of cut-over and fire-wrecked land in this northern region of ten thousand lakes. Given back its forests, it will be a land of ten thousand charms—a pro-

ductive empire yielding lumber, pulp and paper, the labor for many hands, recreation and an abundance of small and large game. But without fire protection, the task of regeneration must continue to grow more and more discouraging. Speaking of the situation in Minnesota, Commissioner William A. L. Bazeley, of the Massachusetts Department of Conservation, and retiring president of the Association of State Foresters, said at the conclusion of the trip:



THE WONDERLAND TRAIL, MINNESOTA NATIONAL FOREST, WINDS IN AND OUT AMONG THE GIANT NORWAY PINES IN WHAT IS FINE FOREST LAND.





IT HAS BEEN CHARGED THAT PLANTING ON THE MINNESOTA NATIONAL FOREST IS A FAILURE. THIS AREA WAS PLANTED IN 1900 TO RED AND NORWAY PINE AND IS NOW A FORMIDABLE YOUNG FOREST.

"The forest problems of Minnesota, especially fire protection, are so large as to seem almost appalling to a state forester who comes from Massachusetts. In Massachusetts we can get only a partial forest fire protection by the expenditure of \$60,000 on an area of 8,000 square miles, while the State of Minnesota is expecting Forester Cox to protect more than five times that area with an appropriation of \$175,000. There are favorable aspects to the forest problem in Minnesota, however, chief of which is the ease with which they can get natural reproduction of coniferous trees, especially of Norway and jack pine where circumstances permit, said circumstances being protection from fire and a source for the seed. Except in certain localities there is not that rush to hardwood reproduction on cut-over lands that has to be met in most sections of New England. Where natural seeding is not possible, the conditions for artificial planting are ideal. I was also impressed with the future possibilities of jack pine, especially if allowed to grow on soil site one grade better than that to which it is now largely confined.

"The last impression is that forestry in northern Minnesota is a task for the state, national government and large timberland owners. The private owners are too few and too poor to be any factor in the situation. Their chief use will be to serve as laborers for the larger interests."

State Forester Edmund Secrest, of Ohio, summed up his observations as follows:

"One who travels through Minnesota's forests for the first time is practically bewildered by the conditions encountered. Three facts are impressive: First, the excessive devastation by fire. Second, the succession of inferior growth following fire and logging, and the absence of reproduction of the white and red pine, which species con-

stituted such a considerable portion of the State's forest wealth. Third, the tremendous responsibility Minnesota faces not only in protection, but in renewal.

"Minnesota has a land classification problem of considerable magnitude, and one which it would seem will call for careful study. One cannot escape the conviction, however, that she will always remain a timber producing state of considerable rank. She is fortunate



FURTHER EVIDENCE OF THRIFTY REPRODUCTION IN AN OPEN STAND OF NORWAY PINE ON THE MINNESOTA NATIONAL FOREST.



in having well established and apparently permanent wood-using industries, and she is in a position geographically to supply highly developed agricultural and industrial states near at hand. This combined with her remarkable scenic and fish and game resources, would make her future seem bright with respect to her forests.

"Minnesota however, must face the problem of forest protection and renewal. She must meet them by giving better support to an efficient Forest Service, under the leadership of Mr. Cox.

"She should convert the state lands into state forests under the administration of the state forest service.

"The State Forester is handicapped in not being provided with forest nurseries. Minnesota needs to do a lot of forest planting, and judging from the successful seed tree experiments observed, regulatory measures in this respect are well worthy of trial.

"But above all Minnesota should prevent forest fires."

The state foresters were a unit in believing that Minnesota should place all of its state forest land under the supervision of the State Board of Forestry and passed a resolution strongly recommending "that the remaining state-owned land be placed under the control of the State Board of Forestry, believing this to be the best land policy not only for Minnesota but for the country as a whole." Minnesota has thus far set aside some 400,000 acres in State Forests which are under the supervision of the

state forest service but there remains about 700,000 acres, under control of a board of timber commissioners, from which the state is currently selling off timber and disposing of the land or holding it as cut-over property. Commenting on this policy, C. R. Pettis, superintendent of state forests, New York, said:

"Minnesota seems to be a country where by process of elimination and classification lands will be eventually turned into their proper use and held for that purpose. In the meantime, I think their policy is radically wrong.

"We went through very much the same system in New York. A century ago the state was the owner of vast areas of wild mountain and forest land, and they were patented in large and small tracts with the

idea of getting rid of the land as quickly as possible and putting a paltry sum of money into the state treasury. A great many people, with the very best of motives and intentions, acquired some of these lands to build baronial estates, etc., and the history of the country is a series of wrecks of life and finance.

"About 1820, a law was passed which provided that these lands which had been patented could be taxed. This placed a burden upon many of these landowners with little income, and on account of the inaccessibility of the timber they were unable to obtain from the property revenue to make it supporting. This led to a kind of lumbering where only at first the white pine was taken off. In those days of much cheap lumber probably this was all they could afford to take out, and then only the choicest parts of the tree which was taken down were removed. After such lumbering oftentimes the lands reverted to the state because no one would pay the taxes on the property.

"The state held these lands as security for the taxes which they had advanced. If the land did not burn over in later years when timber became valuable, some of the lumbermen could go to the state comptroller and pay up the back taxes and get a deed for the land, and they would go in and lumber off the cream of the spruce and then let the land go for taxes again.

"This sort of process continued and was extensively

worked until the year 1883 when laws were enacted prohibiting the further sale or redemption of any lands owned by the state in the twelve Adirondack and the four Catskill counties. This law immediately made a forest preserve of substantially 800,000 acres. The land was in the custody of the state comptroller and he did not know what to



DOES THIS LOOK LIKE NATURAL REGENERATION OF NORWAY PINE ON THE MINNESOTA NATIONAL FOREST IS A FAILURE, AS CERTAIN OPPONENTS OF THE FOREST WOULD HAVE CONGRESS BELIEVE? AREA CUT OVER IN 1908-1909, TEN PER CENT OF ORIGINAL STAND LEFT FOR SEED TREES. NOTE ABUNDANT REPRODUCTION.

do with it. In 1884, the legislature made an appropriation of about \$5,000 for the use of the state comptroller in appointing a commission to investigate the matter and make a report as to the policy of the state in the handling of these lands. Dr. Charles S. Sargent, of the Arnold Arboretum, was made chairman of this commission and they made a report to the legislature in 1885, and as a result the care and custody of these



lands, together with fire prevention measures, etc., was entrusted to this new department.

"In Minnesota, it would seem to me that the same policy would be pursued as was done by Roosevelt and Pinchot in the National Forests, by setting aside all of the land which the state owns in the forest sections of Minnesota, stopping the sale of their land and timber and waiting for a classification of the area into agricultural or forest types, and then eliminate the larger agricultural areas and set aside permanently the forest areas for forest purposes and have this under the administration of the Forest Service and let the lumbering be pursued under proper silvicultural methods by the state forester."

Among other resolutions passed by the association was

one declaring that the cuttings under the 5 and 10 per cent seed provisions on the Minnesota National Forest are a success and urging the government to complete its payments to the Indians in order that "the

public may be protected and the area permanently established as a National Forest and a recreational center for the middle west." Another resolution commended the *Milwaukee Journal* "for the great and conspicuous public service which it is

performing in bringing the subject of forestry before the public. New officers elected by the association for the ensuing year are: President, R. Y. Stuart, forest commissioner of Pennsylvania; vice president, F. A. Elliott, state forester of Oregon; secretary-treasurer, Chapin Jones, state forester of Virginia.



A SCENE IN THE RAINY LAKES, THE OLD CANOE HIGHWAY OF THE HARDY HUDSON BAY TRAPPERS, AND STILL THE CANOEISTS PARADISE.



AN ANTEDELUVIAN STEED (?)

Wide World Photograph

Wrong again. This is simply one of the freaks of nature that we read so much about but see so little of. It is really a tree grown into the approximate shape of a horse. It is located in the woodyard of the Huntington estate at Santa Barbara, California. Mr. Huntington, purchaser of the famous "Blue Boy" painting at \$480,000 and which had just arrived at the time this photograph was taken, March 27, 1922.



# CORVUS THE CROW

By Edward Howe Forbush

State Ornithologist of Massachusetts

**A**FTER all, much as we may dislike to admit it, the abused and anathematized Crow is the great American bird. Who sees the American Eagle, and who does not see or hear the Crow? We may find him in the primeval forest or in the heart of the city. In Boston he builds his nest on a street tree in the Back Bay and feeds his young with eggs and fledglings from the nests of pigeons on the State House. You may even see him perched on the gilded dome, cawing raucously to his beloved mate.



Photograph by Arthur A. Allen

## THE HUNGRY HORDE

Young Crows are nearly always hungry. Their stomachs resemble a bottomless pit.

'Tis true the Crow has a bad name, and not without reason. To begin with he is black, and that is held against him, although he may not be so black as he is painted. Then he is too smart. As Dr. Cobb says, he knows how to keep out of the way of many a blunderer with a gun, and he is very likely to commit some abominable mischief in the back yard early in the morning before we are up. It irritates us to have this disreputable fowl take such a mean advantage of us, especially as we know that it would not have happened had we been up betimes. The creature is unpopular because he exposes our delinquencies. Then again, according to our standards, he is a thief, for he will take anything edible that

he can get his bill or claws on. He immediately reduces it to possession, making it his own, without regard to any prior claim of ownership on our part, and it is extremely difficult to arrest such a cautious and elusive culprit. When it comes to sterner measures, he takes good care of his precious skin. But the Crow has his uses. He destroys many a pest, including the destructive gypsy moth, and, like the red fox, he will be with us always, or so long as any predatory wild creature can survive under the inimical influences of civilization.

The Crow takes a prominent part in maintaining the balance of nature. He feeds on the eggs and young of song birds, and even on the parents when he can catch one, but he also destroys mice—the enemies of song birds. He eats white grubs and cutworms and other insect enemies of our crops, but he also takes a part of some of these same crops, and eats some of the other birds that



Photograph by Cordelia J. Stanwood

## THE PIRATE

A young Crow just starting out on his piratical career. His shining black coat is the flag he flies.

feed on cutworms, grubs and other crop enemies. If we pursue this subject farther we shall find that it will read a good deal like the story of "The House that Jack Built."

Robins and Crows feed on many of the same insects,



and an increase of Crows is quite sure to be followed by a decrease of Robins, or *vice versa*. Mr. Harrison F. Lewis furnishes some figures which may signify such fluctuations. From May 17 to June 5, 1920, he counted the number of Crows and Robins that he saw daily in the Province of Quebec, and from June 7 to June 27 he did the same in Nova Scotia. The average numbers seen daily were: In Quebec, 18.5 Crows and 12.4 Robins; in Nova Scotia, 12.9 Crows and 41.1 Robins. Here it would seem that a moderate decrease in the number of Crows had resulted in a considerable increase in Robins. Of course, this one example is hardly sufficient to establish a fact, but such a proportion would not be unexpected.

When the behavior of Crows is looked at from our standpoint they appear to do considerable harm. The good that they do is neither seen nor appreciated. It is well to shoot Crows (if we can) when they are doing injury to our property, but it is quite possible to overdo the shooting. To cite but one instance: Some years ago one of my friends who had a large sheep farm found that Crows were killing his young lambs, first pecking out their eyes and then eating more or less of their carcasses. When he had lost about two hundred lambs he offered a bounty of fifty cents a head on any and all crows, although I had advised against it. The neighboring gunners soon very nearly extirpated the Crows from that immediate region. About three years later my friend found that the grass in his pastures was dead, destroyed at the

roots by white grubs which had increased rapidly soon after the Crows were extirpated. Possibly some of the dead lambs on which the Crows were seen feeding may have died of disease; others may have been killed by foxes. Probably only a few Crows had contracted the habit of killing lambs, and if my friend had set one good man to watch and kill these few culprits, he might have saved both lambs and pastures.

In the fourth decade of the Eighteenth century the people of all the New England colonies enacted laws for the destruction of Crows and Blackbirds. Heads of these birds were accepted in lieu of taxes in some towns. A bounty on the heads was paid in many. In Truro, on Cape Cod, every married man was required yearly to kill a certain number, and no single man could marry legally until he had turned in his quota of heads. As a result of all this the birds were nearly exterminated, and in 1749 the grass crop was practically destroyed by grubs, grasshoppers, cutworms, etc., so that the farmers

had to send to England and the Middle States for hay to feed their cattle and carry them through the winter. The Crow is a tremendous destroyer of grubs and grasshoppers, and while we may have too many Crows, it is possible to have too few.

The Crow has some good qualities. He is an entertaining rascal. To begin with, he is a great mimic. I have heard the most remarkable notes from wild Crows, seeming imitations of Cuckoos and Owls, and a perfect mimicry of the whining of a puppy. A correspondent from New Hampshire reports Crows making sounds like the distant barking of dogs, the squawking of hens, the efforts of a young cockerel trying to crow. Another correspondent saw a Crow hold its head well up, curve the back of the neck and say, *Oh, oh, oh*, slowly, in a tone which might have been given by a "soft-voiced young woman." Another believes that he heard a Crow emit a sound like the "laugh of a loon;" another heard a Crow produce a rattling sound, like the drumming of a

Woodpecker, accompanied by violent movements of its head, body and tail. An imitative Crow was seen and heard to "honk like a goose." Last summer I heard one repeating intermittently for an hour in the early morning the syllables *clock'ity clock, clock'ity clock*. All the above calls seem rather unusual, but Crows normally utter a variety of cries.

In the love season some rather melodious notes are given, which perhaps represent the song of the sable bird. Often his antics at this season are ludicrous. The genuflections and awkward caresses with which he greets his dark inamorata must be seen to be appreciated.

I am not sure that his family ties are always all that they should be, for how can we account for the fact that sometimes three Crows are seen about one nest? This is not an uncommon occurrence in southern New England, and Mr. Frank Novak, of Fairfield, Connecticut, tells me that in 1920 three Crows there were feeding young in one nest. Only last summer the classic shades of the Back Bay in Boston were scandalized by a spectacle of this "eternal triangle." Mr. Harry V. Long, who lives in the neighborhood, says that three birds played up and down Commonwealth avenue with sticks in their beaks for a week or more before they decided just where to build. Often during the building there were two birds in the nest arranging sticks, while the third was an interested spectator on a branch just above it. After the two left, the third dropped into the nest to fix things to



Photograph by Arthur A. Allen

CROWS HAVE THE "NAME," SO THEY GET THE "GAME"

Known as a thief, he lives up to his name, for the crow will steal and eat almost anything that it can get its bill or claws on.



its own satisfaction. All these arrangements went on amicably enough. When short of nesting material two of the Crows pecked tar off a nearby roof and pasted that on the nest, while the other cawed encouragement from the chimney top. When the eggs were deposited one of the birds took up the duties of incubation while the other two came and went. Whether this was bigamy, polygamy or polyandry, deponent saith not.

Young Crows make exceedingly interesting but often troublesome pets. The Indian boys knew this and kept them in their villages. When we adopt an infant Crow into the family we may expect that there will be "something doing" most of the time. To begin with the youngster will clamor for food during the daylight hours unless its wants are supplied immediately. A young Crow's stomach seems to be something like a bottomless pit, and if not continually filled with a great variety of food there is sure to be trouble. In the brief intervals between the "eats," the young Crow is like a child with nothing to do and is almost certain to get into mischief. As soon as it is able to fly well, it is likely to carry off and hide small tools, trinkets or jewels, or to lay them down carefully on the roof or the chimney top. Its depredations are by no means confined to the household of its owner but often extend to neighboring houses, and it may concern itself particularly with the property of visitors.

A country grocer making his regular rounds was surprised to find every paper package in his wagon torn open and all the eggs broken. This occurred several times at a particular place. Later he learned that two tame Crows were the culprits. A Crow seemed to delight in stealing its master's pipes and hiding them in the woodpile. Having nothing better to do, it pulled up young plants in the garden beds and laid them all out carefully in order along the rows. Another delighted to peck at the bare legs of the "kiddies." Another frequently could be seen backing a frightened, screaming tot up against a wall while it pecked at the buttons on the child's shoe or at the feet if they were bare. Another stood for

long periods at a gap in a board fence waiting for a little fox terrier to come through the opening. Then the expectant bird pecked that frisky pup on the nose, sending it yelping home, and immediately flapped to the top of a grape arbor, where it went into ecstasies over the joke. Sometimes the dog was too quick and got away untouched. On such occasions the ecstasies were omitted. This Crow followed its master while he was digging in the garden. It picked up all the worms that were unearthed and when its mouth was filled it dug a hole and buried the worms, but could not seem to understand

why the worms were not there when it returned to the hole with another mouthful. Still another tame Crow, fond of eggs, learned that when a hen cackled she was advertising her wares, and the egg was soon on its travels, with a busy Crow lending it wings.

I find among my notes records of ten tame Crows that have learned to pronounce words, but in each case only a few words were enunciated distinctly. The first one learned to say "Fred" (his master's name), "father, mother," and to call the cows, "Boss, boss, boss, boss." He also learned to drop corn on the ground and then imitate the cock's call to the members of the harem, but when the hens arrived in response to his well-imitated call he picked up the corn and flew away, apparently enjoying the joke. According to Mr. Henry Oldys, the late Nelson R. Wood, taxidermist at the National Museum at Washington, D. C., had two or more Crows at different times which could repeat phrases, one of which was "Come on, Jack." Another

Crow at Roxbury, Massachusetts, could cry "Hello, Joe" and could call the cat. During an election he heard the boys cheering their candidate, and soon could "Hurrah for Robinson" with the best of them. This bird learned to laugh "like folks"—"especially after he had done some trick."

A New Hampshire Crow which had learned but one word was accustomed to roost near a sidewalk. It was rather startling to have "Hello" shouted in one's ear, apparently from the empty air, when passing along the



Photograph by Dr. Arthur Parcher

#### A CROW MAKES AN INTERESTING PET

Many instances of record prove that he has a decided sense of humor, and he can be taught to talk and mimic with apparent intelligence and, at times, startling effectiveness.



sidewalk in the evening. A New Bedford Crow was beginning to display some conversational ability and had learned to chase the cats off the back fence when he died from eating flies from flypaper. A young Crow that was captured in Portsmouth, New Hampshire, developed a violent and unaccountable antipathy to anything of its own color. While coming home on the train this bird raised an unusual rumpus every time the colored porter came in sight, much to the amusement of the passengers. If a piece of black cloth was dropped in the yard the Crow would make off, scolding as long as the cloth was in sight. This bird learned several phrases such as "Oh, go on!" "Now you did it!" etc. Another Crow, at Hopkinton, made friends with all human companions excepting a boy who clipped its wing. After that the bird would have nothing more to do with that boy. If any one threw water on this bird it made sounds like the profanity of an angry man. Mr. Adelbert Temple writes, however, that it delights in bathing and will pull the plug out of a water pipe to spray water over its feathers. Mr. James Knight, of Amesbury, had a tame Crow. He says that brother Tom sometimes overslept. At such times his honored sire, standing beneath the window, shouted most emphatically, "Tom, get up!" The Crow noticed this and learned to rouse Tom and everyone else in the house at daylight each morning by flapping to the boy's window and repeating the call with great emphasis. One day the boys had a bonfire in the field. Jack, as the Crow was called, had been watching the exciting scene and listening to wild hurrahs; he soon surprised them by hurrahing with the rest. After that, whenever he noticed a cloud of smoke rising from the chimney he saluted it with rousing cheers.

When we observe the talent for mimicry and imitation exhibited by young Crows in domestication we cease to wonder that now and then a wild Crow is seen or heard to imitate some unusual sound or to reproduce some noticeable action of another creature. Some Crows have learned to catch fish, possibly from watching sea gulls, as they fly down and snatch the fish from the water in exactly the sea-gull manner. Others resort to gull tactics in order to break open the shells of hard-shelled

mollusks, such as sea clams and scallops. They seize the clams in their claws and flying high drop them on the rocks or the hard ground. If the first fall fails to break the shell the clam is taken higher, and again dropped, until the shell gives way. Sometimes the strong shell resists until it has been dropped four or five times.

This recalls an old tale of my school days regarding a Crow which chose the bald head of an ancient philosopher as a suitable object on which to drop its hard-shelled tidbit. The mollusk landed on the right spot but proved harder than the skull of the philosopher. The funeral was well attended.

Our black imitator shows considerable intelligence in taking advantage of other creatures. It is not easy for

Crows to get shellfish, as clams usually keep well buried in the mud. Years ago, about Puget Sound, hogs were allowed to run at large, and at low tide they worked out upon the flats, where they rooted out common clams, razor clams and other marine animals. Often a Crow might be seen perched between a hog's ears, from which point of vantage it sometimes was able to snatch clam or razor fish from the hog's champing jaws. The Crows there at that time were rarely troubled by the inhabitants, white or red, and were as tame as street sparrows. At times one was seen to alight on the highest point of the "rear elevation" of a bent-over, clam-digging klootchman or squaw, in the hope of seizing some of the results of the digger's patient toil.

A treeless island on the northwestern boundary of the United States was oc-

cupied by a colony of gulls and guillemots. There was no wooded island within a mile. Therefore, whenever the natives disturbed the sea birds and drove them from their nests the Crows, which always came from other islands to feast on the eggs of the sea birds at such times, must fly a mile or more to reach the spot. Those on the nearest islands arrived first, followed by those from more distant points. One pair of Crows stole a march on their brethren by digging a hole in the ground on top of the gull island and building a nest in this hole, like that of a song sparrow in a ditch bank. Whenever any disturbance arose these Crows and their young always had first chance at the eggs and young of the sea



Photograph by Edward Howe Forbush

#### TAME CROW LOOKING FOR TROUBLE

These birds take peculiar dislikes to certain things. This fellow has a particular antipathy for dogs, one of which he sees in the near distance, so he is preparing for trouble.



birds until I arrived on the scene and stopped their nefarious operations. This is almost the only instance on record of Crows nesting on the ground. The reason for such nesting in this case was plain.

Crows are clannish creatures. They will help each other, but that is as far as their altruism extends. To the rest of the world they are Ishmaelites. Every man's hand is against them, and many wild creatures seem to fear them, but they are kind to each other. Not long ago a Crow, perhaps too enthusiastic in his fishing, fell into the Merrimack River. His plumage was soon soaked, and he was carried along in the flood, unable to rise from the chilling waters, but his cries brought assistance. A flock gathered cawing overhead. Suddenly one flapped down to the surface, seized the drowning comrade and laboriously bore him a short distance toward the shore. As the strength of the first rescuer failed, the soggy bird was relinquished to another, and so one after another seized and carried landward their unfortunate comrade until he reached the shore. There he spread out his soaked pinions in a sunny spot and dried them, when all flew happily away to the woods. How rarely does similarly effective and speedy human aid reach a drowning person. The well-known propensity of the Crow to come to the aid of a stricken comrade seems to be recognized by Eagles, Hawks and Owls, and so active, healthy Crows rarely are attacked, even by Owls, except at night,



Photograph by Arthur A. Allen

#### THE STRUGGLE TO SURVIVE

In winter the crows take what they can get. Nothing edible comes amiss during this lean season.

when sight seems to fail them and they cannot combine in defense. Crows in winter gather from far and near to roost at night in some favorite wood. Such roosting places sometimes are visited by many thousands. In the darkness of night the Horned Owl comes to these roosts and takes his pick of the slumbering inmates. Noiselessly he swoops and strikes, there is a brief chorus of startled caws, and the great Owl bears his bloody victim to some

snowbank and picks its bones. Its companions then are helpless to avenge its fall, but woe to that midnight assassin if they catch him out after daylight. His cue now is to hunt some deep, dark cavity in a hollow tree and "pull the hole in after him," else those Crows may make life miserable for him for the rest of the day. They will surround and envelop him in harsh and almost incessant clamor. Hundreds of his noisy bodyguard will escort him wherever he goes, and some of the bolder ones may even come to blows with him. There is no more sleep for the evil one that day unless he can find some secure hiding place.

Crows do not hesitate when in numbers to attack the boldest Hawks, and even the lordly Eagle is persecuted



Photograph by Arthur A. Allen

#### A STUDY IN BLACK AND WHITE

The first sign of food on the newly fallen snow attracts a hungry flock of shiny, black crows.

by them. Sometimes, however, a lone Crow, becoming unduly impudent, attacks a Hawk single-handed, and right there he makes a great mistake. Once I saw a Crow badgering a little Sharp-shinned Hawk. The Hawk fled for a short distance, then turned on the Crow, and that Crow was fortunate to escape. Crows will mob and follow a fox for hours, giving him no peace, until at last, tired of "fuss and feathers," he retires to some secluded retreat. Mobs of Crows sometimes attack and kill birds or animals too large for a single Crow to cope with. Thus full-grown rabbits, grouse and pheasants are sometimes killed.

A wounded or dead Crow often becomes the focus for a gathering of all the Crows in the immediate region. To the Crow wake they come from near and far in noisy convocation, and after a long time, having made noise enough to "wake the dead," they disperse more or less quietly.

When the fall migrations begin there are certain gathering places where thousands come together in noisy conclave. The farmers call these gatherings Crow conventions, "Cawcusses" would be a more descriptive word.

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# PUBLICITY IN STATE FORESTRY WORK

By Henry C. Campbell

Assistant Editor of the Milwaukee Journal and Chairman of the Wisconsin Forestry Association.

THE chief foe of forestry is ignorance. Hardly anybody is opposed in principle to forestry. Progress is retarded not by direct opposition, but by the indifference of the many who do not know, do not understand. Our improvidence, which resulted in laying waste our great forests without any plan or policy looking to the creation of new forests, arose very largely from ignorance. Even today, when the economic shoe pinches painfully, ignorance of forestry, ignorance of the need for forestry, ignorance of the achievements of forestry in other countries, is still all too widespread.

There is only one way to dissipate widespread ignorance, and that is by widespread publicity. It is imperative that the truth be dinned into the minds of the people.

The practicality of forestry, the urgent, absolute duty of creating new forests and the danger to our civilization of neglecting forestry, all these are things that the public must be made to understand.

We must realize that no adequate forestry policy can be adopted and maintained in our country or in any of our states unless it is supported by a strong and enlightened public sentiment. To arouse this sentiment to a point where it will be irresistible we must depend upon publicity—that is, the printed word. In short, publicity of the right kind must be the basis of all efforts to make the practice of forestry no less persistent and systematic and continuous than the growing of wheat or the growing of potatoes.

No man can write effectively in the cause of forestry

unless he possesses reasonable knowledge of the subject, good judgment, some imagination, no little force, ability to state things clearly and the gift of making pictures out of facts. No writer who cannot interest and convince his average fellow-citizen can render real service to the cause of forestry. He may write countless articles, even large tomes, and yet not make the slightest dent in the popular mind. Briefly stated, the prime requisites are reasonable knowledge of the principles of forestry and a trenchant, graphic pen. I feel that I am within the truth when I say that foresters who possess the power of writing in a way that appeals to the popular mind are not many. Certainly, I am within the truth when I say that professional writers who do possess the power of

appealing to the popular mind and possess, in addition, a working knowledge of forestry, are still fewer in number.

Without the slightest desire or intention to criticise foresters for not being able to write more effectively, or to criticise publicists for not knowing much more than they do about forestry, it nevertheless seems very plain to me that the one great reason why the cause of forestry has lagged is that this power



PELICAN LAKE

The campaign carried on in Wisconsin by the author has created state-wide interest in the great outdoors.

that comes from knowledge combined with effective writing has been limited to a very small number of individuals.

The methods of publicity which The Milwaukee Journal, a consistent advocate of forestry for twelve years and longer, has adopted in order to arouse proper interest in state forestry are somewhat different from any other



plan that has come to my attention and perhaps it is for this reason that it has attracted considerable attention in forestry circles, especially in forestry schools. An outline of these may be timely. The Journal's plan is based largely on man's natural love of trees. It aims to strengthen and crystallize

this feeling. It advocates close care of shade trees in cities and the planting of native trees along the country highways. It urges the establishment of community and county and state parks in regions of virgin timber and lakes and streams. It preaches the doctrine of community forests. It emphasizes the necessity of planting trees along the shores of Wisconsin's lakes and rivers, shores now bare to the extent of hundreds of miles. More than all else, however, it points out the need for a broad, comprehensive system of state forestry. It does not hesitate to assert that there are fully three million acres of non-farming land in Wisconsin and that the state should buy this land and reforest it. It steadily calls attention to the relation of these enterprises to one another and of all of them to the development of the tourist trade, to drawing dividends from a state

highways system that has cost the taxpayers many millions of dollars, and to the importance of forest growth in fostering fishing and hunting. The chief goal in view is always the practice of state forestry on an adequate scale. All these other things are urged, not only because they are valuable in themselves, but because they are essential to the progress of forestry. It is forestry, state forestry, that constitutes the backbone of the program.

To this program, which is nothing more nor less than a plan for the utmost development of the natural resources of Wisconsin, The Journal devotes considerably more than a column a day, on an average. Once a week all these articles are printed in a bulletin the size of an eight-column newspaper page and these bulletins are sent to every newspaper in the state, to all the women's clubs, to community advancement associations and chambers of commerce, to Rotary and Kiwanis clubs and the like and to the rod and gun clubs of the state. This means that forestry literature reaches every community

in the state every week. Among organizations of men and among women's clubs it has stimulated interest in forestry and in other features of what may be called a constructive out-of-door program.

After everything is said and considered, however, the chief feature of this plan, the chief value of it, is in arousing the interest of the state press, and thus spreading the gospel of forestry in every nook and corner. For going, as it does from one newspaper to other newspapers, it receives a warm welcome from the average editor. This is the new idea that the plan embodies. Speaking generally, the editors of Wisconsin realize that The Journal is working in an earnest and unselfish manner to advance the interests of the state. They are asked to cooperate in this work, not only in the interest of the state, but in the interest of their community and of themselves, and the result is that to the extent of many columns The Journal's articles on forestry and allied subjects are reprinted in the state papers every week. There is being built up in Wisconsin, as a consequence, a sentiment in favor of state forestry which, in my opinion, will be irresistible.



WOLF RIVER DELLS

It is for the preservation of such beauty spots as this that the author is so ably arousing sentiment in Wisconsin.

It was this sentiment, already partly aroused, which induced the last state legislature to initiate a constitutional amendment designed to give the state full power to engage in growing timber as a business. It will be necessary for the next legislature to approve the measure. I have no doubt that it will do this. Nor is there any doubt in my mind that the people will ratify the amendment when it is submitted to them at the polls. Then the decks will have been cleared for definite action.

In several other ways which have proven effective The Journal is engaged in promoting the cause of forestry in particular and its out-of-door program in general. Some eighteen months ago it prepared, printed and distributed in widespread fashion, free of charge, a booklet entitled "Put Idle Acres to Work." This contained a state forestry program which it formulated, articles advocating forestry and written for it by Col. W. B. Greeley, chief of the United States forestry service; Charles Lathrop Pack, president of the American Forestry Association;



P. S. Lovejoy, Enos A. Mills, William T. Cox, state forester of Minnesota; Marcus Schaaf, state forester of Michigan; C. L. Harrington, forestry member of the Wisconsin Conservation Commission; P. S. Ridsdale, editor of the American Forestry magazine, and others. A notable feature of the booklet consisted in the recommendations in favor of forestry which Carl Schurz made while he was secretary of the interior during 1877-80, messages which at that early period sounded a clear warning that if an adequate policy of protecting our timber, as older countries were doing, were not adopted in time, the result would be the deplorable conditions that we face today. Another noteworthy article in the booklet consisted of quotations from an article written in 1855 by Increase Allen Lapham, father of the federal weather bureau, in which he set forth cogent arguments in favor of the adoption of a sound forestry policy. In 1867 Mr. Lapham was made chairman of a state forestry commission, created by the Legislature of Wisconsin, with the result that a report of 100 pages "On the Disastrous Effects of the Destruction of Forest Trees Now Going on so Rapidly in Wisconsin," was submitted to the lawmakers. A synopsis of a survey of Wisconsin's forests made in 1898 by Dr. Filibert Roth, dean of western foresters, found a conspicuous place in the booklet. Thus this publication pointed out the lessons of the past and outlined the policies that should be carried out in the future.

The Journal has used the cinema to promote the cause of forestry. During 1921 it engaged a high-class photographer, who is a lover of Nature as well, to take motion pictures of the most striking and beautiful spots in the state. These constitute two reels. They have been shown in scores and scores of communities. As a rule, some member of the staff, conversant with the subject, explains these pictures and their relation to the chief features of the Wisconsin program. A printed folder describing the pictures is distributed and two pages of this are devoted to the presentation in clear, simple language, of Wisconsin's great opportunities in regard to things that lie out of doors and of the reasons and advantages of working actively and earnestly to these ends. Of course, state forestry is emphasized.

For years the Journal has maintained a bureau designed to aid motor tourists and this has won the reputation throughout the country of being a model of its kind. It inspects 8,000 miles of Wisconsin highways every year and constantly collects the latest and most reliable information regarding the condition of the principal state and county roads. Motorists get all this information by merely asking for it and not only tours through the state by residents and by visitors from far away points are directed by the bureau, but tours through Michigan, Minnesota and every other section of our country and of Canada. This bureau publishes *The Call of the Open Road*, a guide book for motorists in Wis-

consin, with a general road map and many sectional road maps, with road indexes and directions for going from any important point in the state to any other. One page of this guide book is devoted to setting forth both in brief and in detail the Wisconsin out-of-doors program, particularly state forestry. Although a small charge is made for this guide book, 60,000 copies of it have been printed this year and nearly all of them are in the hands of tourists—are, in fact, their constant companions. This means intensive forestry publicity spread quite far.

In connection with this motor travel bureau there has been organized this year, with 10,000 members already in Wisconsin, Illinois, Michigan and other states, The Journal Tour Club. Every member of the club possesses a copy of *The Call of the Open Road*, with its urgent appeal in the interest of state forestry, and, in addition, pledges himself, in his membership card, to these things among others:

"I will do all in my power to preserve and perpetuate our scenic and natural beauties and to promote state forestry.

"I pledge myself to be careful about starting and extinguishing camp fires and to induce others to help protect our forests against fire."

I earnestly hope that the spirit in which I have set forth *The Journal's* plans and efforts in the interest of forestry will not be misunderstood. It is impossible for me to express specific views on the subject of forestry publicity without citing these examples and in doing this my purpose is merely to be as helpful as possible. Some of the ideas which we are carrying out are original and they have worked out so well in Wisconsin that they may prove of value in other states. We who believe in forestry cannot be too alert, too enterprising, too quick to profit by one another's experiences.

On one point, apart from publicity, but vital to state forestry, pray let me presume to make a suggestion. I realize, perhaps as clearly as almost any other layman, the trials and tribulations which state foresters have suffered from the beginning. Just as I believe in their ideals, so I sympathize with them in their disappointments, setbacks and heart-burnings of the past and present. In view of their unfortunate experiences, it is little wonder that they have felt depressed and discouraged. But if I am in any way a judge of the public mind, times have changed greatly for the better; there is a new, fine spirit in the land and a better day and a real opportunity for achievement are at hand. In every state, however, the cause needs leadership, forceful, determined, constructive leadership. In each state the state forester is the logical leader. I hope that he, forgetting the gloomy past, will realize that the present is cheering and the future bright indeed. Let him take heart and "buck up." The time to do big things is near. The glory of doing them—shall it pass from him and go to another?



# EDITORIAL

## A MESSAGE FROM THE PRESS

**S**PEAKING at a banquet in honor of the Association of State Foresters by the commercial club of Hibbing, Minnesota, a few weeks ago, Henry C. Campbell, Assistant Editor of the Milwaukee Journal, said:

"If I am in any way a judge of the public mind, times have changed greatly for the better. There is a new fine spirit in the land, and a better day and a real opportunity for achievement are at hand. In every state, however, the cause of forestry needs leadership—forceful, determined, constructive leadership. In every state, the state forester is the logical leader. I hope that he, forgetting the gloomy past, will realize that the present is cheering, and the future is bright indeed. Let him take heart and buck up. The time to do big things is near. The glory of doing them! Shall it pass from one and go to another?"

These words convey a timely and heartening message not only to state foresters but to foresters generally. Disappointed and often discouraged at the seeming slowness with which the public embraces forestry, the average forester has had to struggle against a natural drift towards passiveness—a state of mind which holds him self-centered upon his own particular tasks and not only satisfied but preferring to be thus restricted in his efforts. He has had to fight against an influence which tends to dull his vision and to dampen his enthusiasm. Too often he has retired into a sort of technical shell and fallen apart from the slow current instead of persistently doing his shift at the front to help widen the channel for a larger, stronger and swift-current of public opinion.

It is a dull forester, indeed, who does not recognize that the success of his profession depends upon public understanding, public sympathy, public confidence. Ignorance, as Mr. Campbell says, is the chief foe of forestry. No longer is the need of forestry a disreputable issue. The great obstacle is public ignorance of that need. The great task is to enlighten the public. Even now, it means years of hard and persistent work on the part of those competent to present forest subjects in

their true importance and in their true perspective. Road side planting, tree surgery and the like are legitimate pursuits but unless wisely handled in an educational way, they are apt to give the public a misconception of the real economic vitality of forestry. And misconceptions are usually more difficult to correct than plain ignorance.

After all, it is the foresters who, having studied our forest problems in their entirety, have the knowledge which the public needs and wants. The press is the first to feel the public pulse. Mr. Campbell knows whereof he speaks when he says there is a new spirit in the land. It is the almost universal spirit of interest in forestry which one encounters nowadays wherever he goes. The call is for leadership—the leadership of those who understand the country's forest needs. Do foresters fully recognize their opportunity—yes, their responsibility. Every forester can be a leader in telling the public the story of his work and he can do it without interfering one whit with his technical pursuits.

Mr. Campbell says that one difficulty about forest publicity is that the foresters who possess the power of writing in a way that appeals to the popular mind are too few while professional writers with the art of popular appeal and in addition a working knowledge of forestry are still fewer in number. So far as foresters are concerned, the explanation probably is that they have not made an effort to develop the art of writing for the public. There is no good reason why they should not be interesting writers. They are engaged in a work which, for its public appeal and diversity of interests is unexcelled. The actual and potential sentiment for constructive forest action in the country today represents an unlimited force. It invites leadership. With a pen and a camera, every forester can, and should, be a leader. And he will find that with few exceptions, the press is his ally and his medium.

But the forester who waits on public sentiment is a follower. He is not giving his cause or his profession the best that is in him. He is letting the other fellows blaze the way.

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## REFORESTATION IN THE MINNESOTA NATIONAL FOREST A SUCCESS

**C**HARGES that reforestation by the Government of pine lands in the Minnesota National Forest has been a failure, are clearly discredited by the Association of State Foresters, whose members recently met at Itasca Park, and, as a part of their meeting, visited the

Minnesota Forest to examine conditions on the ground. The party numbered some twenty-five or thirty foresters from different parts of the United States and Canada, and upon completion of their trip they passed the following resolution:



"WHEREAS, the members of the Association of State Foresters, on their recent trip through northern Minnesota, traversed over fifty miles within the Minnesota National Forest and are agreed that upon the lands cut over under the five and ten per cent seed tree provisions of the laws of 1902 and 1908 the reproduction of Norway pine is abundant, a second growth is assured, and the experiment is a success, and

"WHEREAS, the reservation of the ten sections and the islands in Cass Lake and the protection from fire by proper burning of the slash and by the maintenance of fire-patrol by the U. S. Forest Service have resulted in establishing the reputation of the Minnesota National Forest as a recreational area of national importance, serving a vast population in the Mississippi valley and adjoining states, and

"WHEREAS, the permanent status of this great public reservation and park still awaits a final settlement under which the Indians whose lands and

timber were ceded to the United States, are to be paid for these lands and for the timber reserved as seed trees and as park areas,

"BE IT RESOLVED, That the Association of State Foresters considers that the early completion of outstanding timber contracts and the valuation of and payment for this property by the Federal Government is a matter of utmost public importance in order that the welfare and interests of both the Indians and the public may be protected and the area permanently established as a National Forest and a recreational center for the middle west."

When a group of thirty experienced foresters come to the conclusions contained in the resolution just quoted, one cannot refrain from wondering if the foundations for many of the other charges which have been brought against this forest, are equally fallacious. All in all, the evidence brought forth ought to be abundantly adequate to put the fair minded citizen on his guard against the representation which opponents of the forest are making to Congress, in their efforts to abolish the Forest and thus open it up for real estate barter.

## THE MOVE TO STANDARDIZE LUMBER

**L**UMBER, it has been said, is simply lumber. It is not sold; it is just bought and no one who buys it knows much about it anyway. The ordinary house-builder, when it comes to the question of grades and values of lumber is lost.

To all of which the average American will heartily agree. The situation is unfortunate. It is not good for the consumer, it is bad for the industry and it is a heavy handicap to economical utilization of our declining supply of standing timber. For years, much has been said and much written about the need of clarifying the lumber trade, but it has been during only the last year that the lumbermen have made a definite move of real constructive promise in that direction.

Under the rather lugubriously sounding term of "simplification and equalization of lumber and lumber grades," the lumber industry has taken the task upon its own shoulders and has assumed the responsibility of carrying it through to a successful conclusion. As a prominent lumberman recently said: "The lumber industry is on trial here and we have got to make good." The public should not only follow this movement with close interest; it should lend to it the heartiest support and cooperation because it goes directly to the elimination of waste in wood and money and to the more complete utilization of our raw wood supply.

Briefly and simply stated, the immediate object is to weld the present multiplicity of lumber grades, sizes and standards into a more or less common code, based upon a more scientific conversion of the standing tree into parts which will best adapt themselves to consumers' requirements; in short, to standardize lumber and the lumber trade. The ultimate possibilities of the move-

ment are not known. If successfully carried out, there can be no doubt but that it will be a large factor in conserving our raw wood supply and thus putting off the day of a timber shortage; in simplifying the lumber trade and stabilizing the industry as a whole; in protecting the consumer against lumber jugglery and other sharp practices; in eliminating some of the wastes incidental to lumber distribution and in arousing the wood user to the urgency of more economical utilization.

Although involving simplification, the problem is anything but a simple one. There are lumber grades, lumber sizes, lumber patterns ad infinitum. Among the softwoods, almost every species has its own set of grade and manufacturing standards. The variety of uses to which the more important woods are put is staggering. Custom is of long standing and tenacious. To bring simple and definite standards out of the present diversity of form and use will tax the sincerity and ability of the industry to the limit. Unfortunately, the industry, itself, is not wholly united on the project. There are lumbermen who oppose it in one respect or another on this or that ground. These are some of the obstacles which will make accomplishment a stronger force than otherwise in winning public confidence.

Neither is the project one which may be accomplished in a day or a week. It can never be solved properly merely by representatives of the industries or experts in their particular lines getting around a table and compromising on standards because they think there will be some improvement. Meetings and conferences are, of course, essential, but the stability of business is too important to make fundamental changes unless it is well established that the changes will be beneficial. Stand-



ardization of lumber and conversion practice must be based upon scientific studies of the different woods and their conversion and application to different uses. Here is a great field of almost limitless possibilities. But such studies will cost money. They must be done by unbiased investigators. And they must be sufficiently thorough clearly to indicate the advantages of the changes proposed. From the publicity emanating from

lumber sources, it is assumed that the lumbermen are prepared to measure up to the job.

Certainly, it is only on the basis indicated above that the public interests will be fully and fairly served, while failure on the part of the lumber industry to thus carry through the project will injure the industry in its public esteem quite as much as it will set back the progress of the whole movement.

## NATIONAL FORESTS AND SURPLUS MILITARY RESERVATIONS

**W**HAT should be done with the one hundred or more army training areas which the Federal Government acquired during the war in the central and eastern states? These reservations range in size from a few hundred acres to more than one hundred thousand acres. With our armed forces now reduced to five per cent of their wartime strength, we have on our hands a large area, in the aggregate, of surplus military reservations, in which every citizen has a direct interest but of which few have much knowledge. It is well to bear in mind, therefore, that in time of war, these reservations are chiefly valuable for military purposes and that in times of peace, many—and perhaps most—of them are chiefly valuable for growing forests.

These areas were bought under war pressure and at war prices. In some cases the Government paid \$60 and more an acre for land which today or in the reasonably near future will not bring anything like that price. They are not well situated or well adapted to private agriculture, industrial development or for homes. This is a statement of fact and not a criticism. Their importance in preparing the armies of America for service abroad and at home could not then and cannot now be expressed in dollars and cents. But put upon the block today and knocked down to the highest bidder, there is no chance for the tax payer to get even a fraction of his money back.

Many of these reservations are not immediately needed for military purposes. All may hope that never again will America be called upon to raise and train great armies for war. But hope blind to possibilities is foolish and dangerous. If, in ten, twenty or thirty years we should be brought sharply up against a crisis such as that of 1917, again might we need one hundred or more suitable areas where men from the fields and factories

could be quickly and properly trained to national defense. If again we should have to buy these areas in the open market, the expense of the previous operation would be duplicated—and probably doubled. Now that we have them, instead of sacrificing them at a great financial loss, the wisest course appears to be to declare them National Forests, subject to military needs.

For forestry offers the solution. Many of these reservations are partly forested and are more suited for forest purposes than for any other use. Joint examinations of Camp Benning, Camp Humphries, Camp Meade and others by military and forest officers have disclosed that the dual use of the areas for military and forest purposes is not only practicable but highly desirable. Protected from fire and trespass, and put under sound forest management, these reservations will contribute to local development and progress and should in time pay the Government a return on the investment.

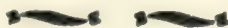
This is particularly true of the areas in the southern pine belt where the rapid growing loblolly can be brought to early maturity for saw-timber, and where slash and long-leaf pine forests can be turpentineed at 25 to 30 years. The realization of an income from these lands would be further beneficial in that it is proposed to devote 35 per cent of gross receipts to local road and trail construction. Furthermore, the local population would find new opportunities for profitable employment.

Properly handled as National Forests, they will serve their most useful and profitable peace-time purposes—as timber producing properties, as demonstration forests where the most approved methods of forest practice can be seen, as public recreation areas, and as upbuilders of local communities. More than that, they will pay their way, and, in years to come, they will return to the people of the United States their wartime cost.

## DIRECTORS RESIGN

At a meeting of the Board of Directors of the American Forestry Association at New York City September 19, Dr. Henry S. Drinker, who has been a director for twelve years, resigned as director. The resignation was

accepted with regret, as were the resignations of Mr. Charles F. Quincy, who has also served for many years, and of Mr. John Hays Hammond, who has been a director for three years.





# TWIN TREES AND NATURAL GRAFTS

By E. F. Andrews

(WITH PHOTOGRAPHS BY THE AUTHOR)

THE twin oak and elm tree of which a picture was given in the November, 1921, number of AMERICAN FORESTRY, attracted a great deal of interest. Such

and tulip tree, and the loblolly and shortleaf pine.

Twins of this kind can be produced only when the germinating seeds are in such close proximity that the



Fig. 1.—Twin white oak and short-leaf pine, near Rome, Georgia.

Fig. 2.—Rootgraft between elm (Left) and haw (Right) near Rome, Georgia.

Fig. 3.—Root and stem graft, sycamore and hackberry, Dayton, Tennessee.

natural grafts are much more common than is generally supposed. In fact, woody stems of almost any kind, if kept in close and continuous contact while young, will coalesce and form a twin, or composite stem. Altogether, I have observed unions more or less complete between the following species: Willow oak and loblolly pine, white oak and tulip tree, white oak and shortleaf pine, red oak and hickory, red oak and maple, river birch and hackberry, beech and white pine, sweet gum and loblolly pine, sycamore and hackberry, hackberry and black locust, elm and haw (*C. spathulata*), sweet gum



Fig. 4.—Stump of twin tulip tree and white oak, Ashland Farm, Walker county, Georgia.

stems of the seedlings, as they increase in size, are forced by mutual pressure to grow together on their contiguous sides. Unions less perfect, sometimes occur as root grafts, when seeds dropped by birds or by the wind lodge in crevices of the root of a growing tree and germinate there. Haws and pines, the seeds of which furnish so large a part of the food of birds in winter are of frequent occurrence as root grafts. And when we consider the vast number of seeds scattered over the ground by trees of all kinds, and tumbled about by wind and water, buried by rodents, or dropped by birds and other



anima's, the chance that those of different species may happen to be brought together is not so remote as might be supposed.

The most remarkable instance of this kind that I have met with was that of a white oak and a tulip tree at the foot of Lookout Mountain, in Walker, County, Georgia. It stood beside a public road that passed through Ashland Farm, the beautiful country home of Mr. Z. C. Patten, of Chattanooga, and was widely known throughout the neighborhood as the Twin Tree. The stems were completely amalgamated to the height of 9 feet and their girth measured 17 feet, breast high. The portion of the circumference occupied by the oak was 11 feet and the tulip tree filled out the remaining 6 feet. Unfortunately



Fig. 5.—Root colony of swamp post oak (*Q. lyrata*), Washington, Georgia. The diameter of the individuals composing it averages about 2 feet.

I was not prepared for taking a photograph when this interesting specimen first came under my notice, and on my next visit, ten years later, found that it had been blown down by a storm some years before, and the trunk cut to pieces and carted away. Only the stump remained, reduced now to the hollow ring of wood and bark shown in the photograph (Fig. 4). It was easily recognized by the shape and size of the stump, and the line of union between the two stems was distinctly shown by the difference in the bark and the graining of the dead wood.

Twins of the same species are more common than those of alien stocks, since seeds of the same kind are more likely to be deposited together, but they attract less attention, being mis-



Fig. 6.—"Identical twin," Spanish oak (*Q. digitata*) 9 feet in girth just below the fork. Near Rome, Georgia. View facing the line of union.



Fig. 7.—Another view of 5, at right angles to the line of union, showing the protrusion or bulge on opposite sides of the common trunk.



Fig. 8.—A vertical fork. Notice the absence of the suture, and the round cylindrical trunk, while that of the true twins is more or less oval in outline.



taken by inexperienced observers for upright forks. These "identical twins," to borrow a term from the medical profession, for the sake of distinction, differ from those just described in being of the same age and parentage, and the two forks into which they sooner or later diverge are generally of the same size and vigor, while in the "mixed twins" of different stocks, they vary according to the relative ages and growth rate of the parent species.

Twin and composite stems of various kinds are also often produced by the union of root sprouts that spring up around the stumps of dead trees, or if the stump is too

large for the growing sprouts to be brought into contact, a root colony, such as that shown in the illustration, (Fig 5), may result. And sometimes, when the main axis of a seedling is broken at an early stage of growth, the two strongest branches remaining are apt to take an upright direction, thus simulating a twin or a double stem so closely that it is not easy to distinguish between them. In general, the true twins are distinguished by a suture which follows their line of union down to or near to the ground (Fig. 1), or in some cases, by a protrusion on opposite sides of the common trunk (Fig. 7), as if the coalescing stems had been forced by their increasing size to bulge out at right angles to the line of pressure.

## THE FUTURE OF THE AMERICAN LUMBER SUPPLY

By A. B. Recknagel

[Professor of Forest Management and Utilization, Cornell University]

**T**HE subject of the future of the American Lumber Supply is a large subject and can best be approached by a study of the past developments of the industry, its present resources and then, predicated upon these two, a look into the future may be ventured.

In 1850 the United States produced five billion board feet of lumber with New York leading, Pennsylvania second, Maine third, Ohio fourth, Indiana fifth and Michigan sixth.

In 1860 the total production was eight billion feet. Pennsylvania led with New York, Michigan, Maine, Ohio, Indiana and Wisconsin following in the order named.

In 1870 the production had risen to 12,755,000,000 feet and Michigan topped the list with Pennsylvania, New York, Wisconsin, Indiana, Maine, Ohio and Missouri next in rank. The center of production definitely passed in this decade to the Lake States where it remained for thirty years. Michigan led the other states of the Union from 1870 till 1900 when Wisconsin took the lead till 1905.

About 1895 began the rise of Louisiana, Mississippi and the other Southern States in the list of lumber producers. Thus Louisiana was third in 1895, second in 1910 and first in 1914. The Southern Pine region overtopped the Lake States in 1900 and was pre-eminent until 1920 when for the first time the State of Oregon displaced Louisiana from second rank. Southern pine may be expected to recover part of the lost ground in the next few years, but the indications are that the supremacy in lumber production is moving to the West.

The shifting of the lumber production center from the south to the west coast began with the rise of the State of Washington to a leading place. Since 1905, with the single exception of the year 1914, the State of Washington has held supremacy as a lumber producer. Today (1920) out of a total cut of 33,798,800,000 board feet, the

order of the first twelve states is: Washington, Oregon, Louisiana, Mississippi, California, Arkansas, Alabama, Texas, North Carolina, Wisconsin, Virginia and Florida. All the rest produce less than a billion feet yearly.

The curve of lumber production from 1904 on indicates a steady diminution since 1912 and a high point in 1906 and 1907. In 1919 the cut was 34,552,076,000 board feet and in 1920 the cut was 33,798,800,000 board feet. The cut for 1921 has not yet been computed.

The statistics compiled by the United States Forest Service in 1920 show that the standing saw-timber in the United States aggregates 2,214,893,000,000 board feet of which nearly half or 1,141,031,000,000 board feet are on the Pacific Coast and of this half nearly one half or 558,571,000,000 feet is Douglas fir.

In all the Eastern States there are only 850,721,000,000 board feet and in the Rocky Mountains 223,141,000,000 board feet.

The Pacific Coast in the saddle and Douglas fir alone could support the present cut of 7,000,000,000 feet of that species for 80 years were it not for the inevitable increase of the amount cut due to failing supplies of other species. A drop in the production since 1919 of 15 per cent in yellow pine, 13 per cent in white pine, and 16 per cent in spruce, indicates the drain there will be on the remaining supply of Douglas fir.

Ultimately the question is not—where is the most of the remaining virgin timber—but where is the most productive forest area? as the American Forestry Association points out. When our virgin timber is gone we will have to "grow our own" since it is obviously out of the question to depend upon foreign sources of supply. The situation in this respect reveals a present forest area of 463,461,000 acres in the United States (excluding Alaska) which figures out 4.32 acres of forest land for each inhabitant.



Of the present forest area the South Atlantic and East Gulf States have 99,000,000 acres; the lower Mississippi States 78,865,000 acres, and the Pacific Coast States 62,586,000 acres. Not all of this is productive now, in fact little more than half now bears saw-timber, but it is reasonable to expect that at least half of it can be made productive in the future.

If, then, 250,000,000 acres of forest were producing 200 board feet yearly we would have fifty billion feet annually, enough to meet our prospective requirements for both domestic use and export.

This is the thing to do—now, while we still have 2,200 billion board feet of merchantable timber, sufficient to support a yearly cut of 40 billion feet for 55 years, make effective a national forest policy which will safeguard the future of the American Lumber Supply.

To go into the details of such a forest policy would carry one far afield. Various measures have been proposed and fully discussed in the various lumber trade journals. The essential thing to do is to *keep a forest on the land* and to reforest areas which are better suited

to growing trees than for any other purpose.

The history of the lumber industry in this country shows a migratory movement from the East to the Lake States, to the South and thence to the Pacific Coast. This is its last stronghold. All this has come to pass in two generations. At present we have enough remaining timber to last perhaps two generations more. Thereafter we will have to depend for future supplies upon home-grown products. Meanwhile we will pay for our past laxity by heavy freight charges on every thousand feet of lumber shipped across the continent. Since the bulk of our people live in the East and half of our remaining timber supply is in the West, this freight charge is today in excess of what it costs to manufacture lumber on the Pacific Coast and offers a substantial margin of profit for home grown timber of equal quality.

We have the forest land, we can keep it producing trees, we can replant such areas as are denuded. If we do not delay in adopting a proper forest policy, we can assure by the practice of forestry the future of the American lumber supply. There is no other way.

## CORVUS THE CROW

(Continued from Page 602)

When in their movements southward or toward the seacoast they cross a mountain range, they choose a certain gap through which the great flock pours. This seems to be good evidence that Crows travel by well-known land marks. Solitary Crows are exceedingly rare. Wherever we find one Crow that is a good place to look for more. A lone Crow perched on a tree is usually a sentinel keeping watch and ready to give warning to his companions who may be engaged in some nefarious business, but occasionally in late autumn or in winter a single Crow seems to have been left behind. Whether he has been ostracised and driven out by his companions for some violation of Crow ethics, if indeed Crows have any ethics, or whether he has merely lost his way, no one can say, but in some such cases the gregarious instinct asserts itself and he joins a flock of his smaller kin, Grackles, Blackbirds or Starlings, flies with them, alights with them, feeds with them, and, for aught I know, roosts with them, seeming to find companionship in this insignificant company, while they usually ignore him, although they sometimes follow where he leads.

Sometimes in the spring, when Crow food is scarce and the youngsters in the nest are clamoring, the parents visit the farmyard in search of young chicks. Working together they soon outwit the old hen. One attracts her attention in front and she rushes to the attack, while the other slips up quietly behind and makes off with one of the callow brood. This maneuver, frequently repeated, continually deceives the simple, distracted mother until the brood is much depleted or the farmer shuts them up. Sometimes when a Crow on a nest-robbing expedition is mobbed by small birds he flaps slowly

away, followed by the excited songsters, while his mate steals in from behind and appropriates the eggs or young from the unwatched nest. A correspondent writes that in one case the Crow flew heavily away, with nest, young and all clutched in its claws. All these depredations of the Crow are evident. Every one knows that it pulls sprouting corn, and many farmers have suffered from its attacks on melons and small fruits. Game preservers well know its liking for the eggs of ducks and pheasants, but its benefactions to the human race usually pass unnoticed. It is a militant slayer of many of the worst insect pests known to man. Locusts, grasshoppers, potato beetles, weevils, caterpillars, army worms, cutworms, white grubs and many other first-class pests are destroyed in myriads by the Crow. He spends far more time in this beneficial work than in all his injurious activities put together. Crows in normal numbers are a benefit to the land, but when too abundant their injurious habits multiply. It behooves us not to exterminate the Crow but to see that its numbers do not unduly increase.

The Crow is proscribed in every country, and nowhere is protected by law so far as I know, yet he persists and increases in numbers in spite of man's persecution. In the midst of civilization his cry is the one dominant note of the wilderness that still remains. This morning as I crossed Boston Common the caw of a Crow came over the rumble of the city street, and the sable bird flapped down to the top of a tall tree by the frog pond, calling loudly to another in a tree near by.

Thoreau says of the Crow: "This bird sees the white man come and the Indian withdraw, but it withdraws not. Its untamed voice is still heard above the tinkling of the forge. It sees a race pass away but it passes not away. It remains to remind us of aboriginal nature."



# GROWTH OF SOUND IDEAS IN GAME MANAGEMENT

By Ward Shepard

THE primary purpose of game protection is to save from destruction species of harmless wild animals that we have no moral right to exterminate. It is the species that we protect and seek to perpetuate. The secondary purpose of game protection is to produce game for hunting, and it so happens that in the world of today this is the object that appeals most strongly to most men who have sufficient interest to act. The two fundamental branches of the subject then are wild life preservation and game production. This article will deal chiefly with game production—and with game production in the wild state rather than with game farming, which is an entirely different subject.

The relation between forestry and game production is intimate; in truth, game production is a part of forestry. Forestry is more than tree culture; it is forest culture. It seeks to perpetuate the forest as an integral unit, so that game production takes its rightful place alongside the other branches of forestry. Foresters must therefore decipher the principles of game management as they decipher the principles of silviculture. Both activities have this in common, also, that each deals with a wild stock that is never in reality domesticated, but that still yields a manifold increase under intelligent care. There is no more need that game should be exterminated than there is that forests should be.

Granted a proper system of game administration, there are two essentials to game production; first, the breeding stock, and, second, game range. This is so obvious as to need no comment; yet, in America some species of animals have been exterminated, some are perilously near extermination, and others lead a precarious life in remote parts of their former wide ranges. The preservation and upbuilding of the breeding stock and the safeguarding of the game ranges are the two vital problems of American game management.

The ominous reduction of the breeding stock of game is a perfectly natural result of the methods of game protection practiced for the last century. With a few

exceptions of comparatively recent date, which will be noted later, traditional game protection in America has revolved round three ideas: the bag limit, the length of the open season, and the closed season of several years' duration. The bag limit was supposed to limit the number of animals that each person could kill; but it never limited the number of persons that could kill, or the region in which they could kill. Consequently, as population increased, as firearms were perfected, and as means of travel were vastly improved, the bag limit became almost a negligible factor as a means of preserving the breeding stock of game. Likewise, the gradual reduction in the length of the

open season has not appreciably offset the effects of the ever-increasing army of hunters and the ever-increasing ease of killing. To the waning power of these two methods was added the closed season extending through several seasons, an expedient usually invoked only when a species had become alarmingly scarce.

I do not wish to depreciate either the bag limit, the short open season, or the universal closed season as useful means of game protection; but as the sole means they were doomed to failure once America had passed out of the pioneer stage.

Fortunately, more promising principles are coming into play here and there—principles that aim consciously at the heart of the problem, at the questions of breeding-stock and game range. Among these, one



VALUABLE LAND FOR GAME REFUGES

Country like this will not raise crops or hardly even live-stock, but it will raise deer and other game. Millions of acres of wild, rough land throughout the country ought to be devoted to raising game.

of the most prominent is the breeding refuge—a comparatively small sanctuary in the heart of a game range where animals can live and breed unmolested, replenishing the adjacent hunting grounds. This principle is extremely flexible, for the number of refuges and consequently the amount of the breeding stock can be adjusted to the intensity of hunting on the adjoining ranges. Its purpose is the production of game for use. Pennsylvania has made notable progress in this direction, and only recently New Mexico has embarked on a thoroughgoing policy of developing a great system of small refuges throughout her magnificent game ranges.



But where game has reached a precarious stage, a more drastic means of preserving the breeding stock is needed; and here again some of the western States are experimenting with local closed seasons. The local closed season may apply for one or more years to any species of animal in any region. For example, a mountain range or a certain valley might be closed to deer hunting. The local closed season, as compared with the game refuge, ought to be particularly useful for such game as quail or grouse and also for game fishes; for game birds in particular are often subject to wide fluctuations in numbers from season to season, so that the closed season may be a more flexible means of protection than the permanent, posted refuge.

The details of administration for these types of protection will be discussed later.

Another principle for safeguarding the breeding-stock—as yet hardly tried—is the quantitative limit of kill. This presupposes a roughly accurate census of game and the determination of how many animals of a given species can be spared each year without impairing the breeding stock. Then only enough licenses to insure the killing of this number would be issued. The obvious criticism of this method is that, as respects most species of game, no game management yet in sight in this country is likely to be intensive enough to insure the detailed game census required. Yet it might be successfully applied even now



MOUNTAIN SHEEP NEAR OURAY, COLORADO

Protection has made them very tame. Only by closed seasons and refuges will it be possible in the long run to preserve the breeding stock of game.



ELK AT LARGE

These elk are a part of the remnant of a once abundant and wide-ranging species. The first duty of game protection is to save the various species of game from extinction.

to such gregarious species as elk or to fur-bearing animals of such restricted habitat as beavers.

In contrast with quantitative or volume regulation, the method of refuges and closed seasons may be called regulation by area. Quantitative regulation would obviously require an absolute determination of the animals on a

given range (even though the determination were only roughly correct). Regulation by area, on the other hand, requires first an arbitrary setting aside of a certain proportion of the game range as refuges. Then by an annual check on the number of animals killed in proportion to the number of men engaged in hunting on that range, it would be possible to determine whether the game were increasing or decreasing—in other words, whether too much or too little of the range were included in the refuges.

This discussion of the breeding stock of game has necessarily brought in the equally important question of game range—particularly the game refuge. It is now necessary to make a careful distinction between the wild life preserve and the game refuge. At the outset of this article, attention was called to the difference between wild life preservation and game production. The same difference marks off the wild life preserve from the game refuge. The preserve seeks to perpetuate wild life in its natural state over a comparatively large area—an entirely justifiable and laudable object. It has no economic motive, but appeals solely to the instinctive admiration that all men feel for the grace and beauty of wild animals, and recognizes that they too have claims on existence. In recognizing this claim man performs a moral act.

The game refuge, on the other hand, is economic in





MOOSE ON THE SUPERIOR NATIONAL FOREST

The National Forests, enormous in extent and containing the choicest range for big game in America, offer an unexampled opportunity for rational game management. But before such management can be put into effect, the Federal Government must have the power of creating game refuges on the National Forests.

motive; its purpose is production for use. The small refuge not only preserves the breeding-stock in a hunting country, but by providing a surplus for hunting it meets an insistent public demand and at the same time wins public support by its practical economic usefulness. Between the preserve and the refuge there is the same distinction as that between the National Forest, whose purpose is economic and the National Park, whose purpose is to gratify man's instinct for natural beauty. Just as it would be futile to attempt to set aside the great bulk of our forests as parks, so it would be unwise to throw the bulk of the game range into game preserves. In choosing between the preserve and the refuge, the object in view is of the utmost importance; yet their wide contrast of purpose has rarely been clearly perceived and acted on.

But game refuges and game preserves do not answer the whole problem of game range. As the private ownership of game range restricts the public regulation of the game on that range, it is essential both in the interest of public and scientific game management and of the preservation of democracy in sport to maintain public shooting grounds. These in the future will be confined more and more to public forests, a fact which overwhelmingly emphasizes the need not only of greater interest in game by foresters, but of sound game management by public agencies.

These new tools of game management, however, will be ineffective without a radical reform in the machinery of administration. Almost without exception, the American States have attempted to regulate game by detailed statutes, fixing open and closed seasons, bag limits, etc. This is a clumsy method, for legislatures are not fitted for administration. They are slow to act, have ineffective means of gathering information, and are usually unable to follow a consistent administrative policy. The State game wardens and commissions have usually been merely police agents, empowered to prosecute poachers. What is needed is the delegation of full administrative power to competent wardens or commissions—power to deal promptly and effectively with the multitudinous problems met in managing a great natural resource.

How far is modern legislation meeting these principles of sound management—the safeguarding of the breeding stock, the preservation of game range, and a sane, flexible system of administration? The Federal migratory bird law is one of the best of the modern laws, and points the right way. It delegates to the Secretary of Agriculture the business of preserving migratory birds. He accomplishes this end by fixing the seasons and bag limits, by prohibiting shooting in the breeding season, by closing certain species against hunting, by prosecuting poachers, and by other means. This law, therefore, meets two of the three essential requirements



DUCKS UNDER PROTECTION

These ducks are on the Wichita Game Preserve in the Wichita National Forest. The migratory bird law protects the breeding stock. The urgent need now is protection of breeding grounds, which are being rapidly drained.



in sound game management: it provides a flexible method of administration, and it succeeds in preserving the breeding stock. But it fails in the third requirement of providing the breeding ground and the range. Until steps are taken to preserve swamps and lakes as breeding and feeding grounds, migratory waterfowl are not safe. Here again, public ownership is necessary; and this ownership the public shooting ground bill now before Congress aims to assure.

The recently adopted State game law of New Mexico is another example of modern legislation. It secures a flexible administration by creating a game commission endowed with broad regulatory powers. It assures the



#### A THREATENED SPORT

Where will the sons of these duck-hunters find their hunting? This question the Public Shooting Ground-Game Refuge Bill is trying to solve by authorizing the Government to buy breeding and shooting grounds now threatened with extinction by drainage.

preservation of the breeding-stock by authorizing the commission to establish refuges, local closed seasons, and feeding grounds. It permits the purchase or leasing of refuges and public shooting grounds. In addition, the best game ranges of New Mexico are within the National Forests, in which State game refuges may be established by the Commission. This law, therefore, com-



#### HIGH NESTING GROUNDS

The ptarmigan nests on the higher peaks of the Rocky Mountains as far south as New Mexico. The wild game of the United States ranges from these Arctic birds to such semi-tropical animals as the peccary and the jaguar—a marvelous varied heritage of which we are merely the trustees.

prehensively attacks the three great problems of game production: the land, the stock and the administration.

The big game ranges of the West are chiefly within the National Forests. Year after year legislation has been attempted that would authorize the President to create game refuges in the National Forests, but without success. Yet the National Forest game refuge is highly important for the protection of big game.

The next great legislative problem will be in the individual states, to modernize obsolete laws and to vitalize impotent state game departments by giving them power. The future of game in America depends on the degree to which the underlying principles of game management are clarified and put into effect. Foresters, because they are trained in the exact regulation of a great organic resource, are peculiarly fitted to clarify the principles of game regulation; and this peculiar advantage places on them a moral duty to take an active part in perpetuating our diminishing wild life.

#### AN UNWRITTEN TOMBSTONE

This is the spot,  
Where once there stood,  
A stand of pine,  
Both straight and good,  
A stand that smiled,  
Then laughed out loud,  
And brightened the world,  
Every time it bowed.

This is the spot,  
Where once there stood,  
A careless man,  
Camped out in the wood,  
Who threw a match,  
That burnt the pine,  
That flooded the world,  
With its bright sunshine.

—Otto L. Anderson.



# WILD PIGEONS AND DOVES

By R. W. Shufeldt, M. D., C. M. Z. S., F. A. O. U., etc.

(PHOTOGRAPHS BY THE AUTHOR)



TAKEN in their entirety—that is, as a list of species and subspecies—we have some seventeen different kinds of wild pigeons and doves in this country, and each and all are contained in one group designated as the family *Columbidae*. This

number represents but a small part of the total list of pigeons and doves found wild in various quarters of the world, as several hundred different kinds have been described by ornithologists, and new species or subspecies are being discovered every year.

Here in this country, our typical Wild Pigeons are



BAND-TAILED PIGEON (*Columba f. faciata*).

Fig. 1.—This bird ranges through western North America, southward to Nicaragua, and east to western Texas. It is the form that has been so frequently mistaken for our extinct Passenger Pigeon (Fig. 4).

contained in the genus *Columba*, and, aside from the Band-tailed Pigeon, all have their habitats in southern latitudes. From time to time, the Band-tailed Pigeon, which is a large and handsome form, is mistaken for the now extinct Passenger Pigeon by inexperienced observers. It ranges from southwestern British Columbia as far south as Central America, being quite abundant

in some parts of its range over western North America. The species has been known since 1823, specimens of it having been collected in Colorado by the expedition under Long. It is a big, stout species, and gets its name Band-tailed from the black band that crosses the tail feathers, which latter is square and not long and pointed as it was in the Wild Pigeon and in our existing Mourning Dove. The plumage is beautifully iridescent or bronzy in several places, particularly on the sides of the neck. Then, too, as a white demi-collar is found on the nape of the neck, the bird is known to many as the White-collared Pigeon. (Fig. 1.)

Sometimes this Band-tailed Pigeon occurs in enormous flocks, especially in western oak forests where acorns are abundant, upon which this species principally feeds.

As in the case of other wild pigeons, this form builds a frail, shiftless nest, which may be placed upon the ground in rarer instances, though more frequently in bushes or trees. It is said to lay but one egg when nesting within our southern boundaries, though most wild pigeons and doves commonly lay two—white, shiny eggs, of an ellipsoidal form, as is the case with the eggs of all our wild pigeons.

The late Dr. Elliott Coues states in his description of this species that it lays “almost every month of the



THE RED-BILLED PIGEON (*C. flavirostris*).

Fig. 2.—This is another form which has occasionally been mistaken for the Passenger Pigeon. It occurs in the Lower Rio Grande Valley, and ranges as far south as Costa Rica.





THE WHITE-CROWNED PIGEON (*C. leucocephala*).

Fig. 3—It is a large species, first described in 1792 by Bonnatte from specimens taken on Guadeloupe Island, West Indies. The bird is very striking in appearance on account of its white crown and the wonderful iridescent colors on the sides of the neck.

year;" and when but one egg is laid, he has heard it said that it is "sometimes carried about by the female." But in what way it is "carried about," this authority does not commit himself.

In Lower California we have another wild pigeon known as Viosca's Pigeon, which is a good deal like the species just described, but the band on the tail may either be absent or only slightly in evidence; in fact, this pigeon is but a subspecies of the true Band-tailed form.

In the same region with these, with its range extended to New Mexico, Arizona, and, perhaps, to the extreme southern part of Texas, one may meet with the Red-billed Pigeon—a beautiful species that lays but a single egg and in a nest of a more substantial character than birds of this family usually build. (Fig. 2.)

Passing to Florida—more especially to the Florida Keys—one may meet with two other elegant forms of these birds, the White-crowned and the Squamous Pigeons, which are also found on certain islands of the West Indies—the last-named bird being only a casual visitor on the islands of Key West. (Fig. 3.)

No longer is the genus *Ectopistes*—the genus next following *Columba*—represented anywhere in the world. It contained but the one species, the famous Wild or Passenger Pigeon (*E. migratorius*), which is now utterly extinct. Last spring (1921) *The Scientific Monthly* reproduced an article of mine devoted to the "Published Figures and Plates of the Extinct Passenger Pigeon," which was illustrated by fifteen fine figures, selected from the works of various authors who had

given pictorial records of the species in their writings. (Fig. 4.)

As many of us are aware, the Passenger Pigeon is a species having a most remarkable history—a history which has been told by many authors in many places. In my above cited article I said: "No species of bird known to man, in all time, can in any way rival the extraordinary series of chapters that go to make up the history of the life-span of this now totally extinct pigeon. As a story filled with romance, prodigality, cruelty and short-sightedness, it outranks the most unbelievable fables of the ancients. As one who, among many, witnessed the marvelous flight of these birds in the early seventies, I never for a moment thought how soon the species would be in the same category with those other birds of which the world will never again see living specimens. We can now only regretfully look back on the picture, and systematize the data at hand with respect to the literary part of this; and not a little has been accomplished by those competent to undertake it."

In the days of Wilson and Audubon, flocks of Wild



CASE OF WILD PIGEONS, U. S. NATIONAL MUSEUM

Fig. 4—This is the now extinct pigeon of North America. It will be noted that there are nine in the flock, the birds having been mounted by the late Nelson R. Wood.



Pigeons, in many cases numbering several *billions* of birds, was no unusual thing; some of the flocks I saw in southern Connecticut possibly contained as many as a million, but no more. In certain localities they were being shot down without mercy, and only a small proportion of the victims gathered up for the markets.

The last of all this great host consisted of some twenty odd birds that lived in the Cincinnati Zoo; but one after another of these passed away, leaving, finally, but a single female specimen, which likewise died in September, 1914. This specimen was sent to the United States National Museum, being promptly turned over to me for a record. I first had three life-size photographs made of it at the photographic rooms of the Museum, and then I took it to my home, accompanied by the late William Palmer, who made a skin of the bird in my workroom, while I photographed its anatomy at different stages of the operation. A full history of all this I have published in *The Auk*, the official organ of the American Ornithologists' Union, and in other places.

Eventually the specimen was mounted by the late Nelson R. Wood, and it is now on exhibition in the Division of Birds of the United States National Museum, where I was permitted to make a photograph of it; a reproduction of that picture was published some time ago in *American Forestry*. It was only in fairly perfect plumage—the usually beautiful tail of the



MOURNING DOVE

Fig. 5—This is a female specimen of the species, and is a reproduction of a photograph from life made by the author when it was kept by him as a pet; it is widely known as the Long-tailed Dove.



NEST AND YOUNG OF MOURNING DOVE

Fig. 6—From a photograph made by the author just after discovering the nest in a grove of pine trees. At this age the young have a plumage of soft, fluffy white down. Note the white "nib" on the end of the bill, just like that seen on newly hatched chickens and other birds.

species being in a very ragged condition, which was plainly shown in the cut.

Artists of many countries have given us illustrations of this bird, and to this Japan forms no exception. In Dr. C. O. Whitman's great volume on domesticated pigeons, with extensive references to the wild forms, Mr. Hayashi, the well-known Japanese painter of birds, gave figures of both sexes of our extinct Wild Pigeon, and these were published in my above-referred to article in *Scientific Monthly*.

In our bird fauna we have some very beautiful wild doves—some eight species arrayed in as many genera. Of these I give a portrait of our well-known Mourning Dove, together with a figure showing the nest and young of this favorite species; these are both from life and taken by myself a few years ago. This species has a number of vernacular names in addition to the one given above—as the Turtle Dove, the California, and the Wild Dove. It is one of the earliest comers in the spring, and its lovely cooing is familiar to hundreds of nature lovers in this country. (Figs. 5 and 6.)

Many years ago, when I was serving as Post Surgeon at Fort Laramie, Wyoming, a wonderful flight of these



ZENAIIDA DOVE (*Z. zenaïda*)

Fig. 7—Another name for these birds is the Love Dove, and the species here shown was named for the cousin and wife of Prince Charles Lucien Bonaparte (Zenaïde). It is a beautiful species in life.

birds took place in that part of the country. It reminded me very much of the flights of the Wild Pigeon which I saw in the early seventies, though the multitude was not quite so extensive. Nevertheless it was a marvelous sight to see thousands of these gentle birds pass through the timber, and to hear the tremendous roar that arose from the use of so many pairs of wings. In some places they rested on the naked prairie in hundreds, where rattlers, hawks, and foxes got away with no end of them and their helpless young. This species is the nearest living relative we have of our extinct Wild Pigeon—the only species having the same form of tail.

The lovely Zenaïda Dove is listed among our birds; but it only occasionally breeds on the Florida Keys, while the White-winged or Singing Dove occurs regularly in Florida and throughout a large area of the Southwest: it has also occurred in Colo-

rado. It requires keen observation to distinguish the sexes in this species—the female being almost as handsome as the male in the matter of plumage. (Fig. 7.)

Finally, we find in our faunal lists the cunning little Dwarf Doves that are ground-loving species and residents of the Southern States. They make very attractive pets and many breed in captivity. (Fig. 9.) Then



WHITE-FRONTED DOVE

Fig. 8—This dove occurs nearly all the year round on its range, and it has been known to breed there. In agreement with most pigeons and doves, it lays two eggs of a pale buffy-white color. It usually builds its big nest in a bush of twigs and "weed-strips."



A PYGMY OF THE FAMILY—THE COMMON GROUND DOVE

Fig. 9—Its scientific name expresses both its size and habits—that is *C. passerina terrestris* or a dove of sparrow-like proportions that spends its life on the ground. It is a southern form and rather a common one. Stragglers have been seen in Washington, D. C., and New York.

we have the Inca or Scaled Dove, here shown in Figure 13. We are to note that it possesses a long tail, and thus reminds one of our Mourning Dove and the Passenger Pigeon. All these very small species of the family are found only in the extreme southern sections of our country, as the Florida Keys, the Gulf States, and only rarely further north. This beautiful little Inca or Scaled Dove which as just said, resembles a small



edition of our Mourning Dove, occurs in the southern regions of our great southwest, in some parts of which territory it is a not uncommon species.

Our elegant Blue-headed Quail Dove is found only on the Florida Keys, where it is a rare species; the top of its head is of a brilliant blue, bounded by a black stripe running through either eye and bounded below the eye by a stripe of glistening white. Its general plumage is of a



WHITE-WINGED DOVE (*Melopelia asiatica*)

Fig. 10—It has received its name from the extensive white area on either wing as shown in the figure. It has an incessant cooing note in the spring and early summer—hence the name *Paloma cantador* given it by the Mexicans.



MEXICAN GROUND DOVE

Fig. 11—Mexican Ground Doves (*C. p. pallescens*) are found in Lower California, southern Arizona and lower Texas regions.

rich olive chocolate, changing to a reddish purple on the under parts, paling out near the median line of the body. These Quail Doves are distinctly American birds, with no near relatives in any other part of the world; and they are called Quail Doves for the reason that in their plumage markings they resemble certain species of Partridges, but there the resemblance ceases.

I may say that in no respect can we draw very sharp distinctions between the true wild pigeon on the one hand and the doves upon the other; the groups practically merge into each other. Either group offers much of interest in the matters of structure, habits, nesting,

and geographical distribution, while there is much to be learned about them yet—at least sufficient to induce our young naturalists to employ their observational powers with the view of obtaining unrecorded facts in their life histories.

More than a century ago, Alexander Wilson, who so truthfully portrayed the lives and habits of many of



THE KEY WEST QUAIL DOVE

Fig. 12—A rather highly colored species with respect to plumage (*Geotrygon chrysia*), inhabiting the Florida Keys, Bahamas, Cuba and Haiti. The Ruddy Quail-Dove is the only other form of the genus, while the Blue-headed Quail-Dove (*Starnoenas cyanocephala*) is another beautiful form and the only one not pictorially illustrated in the present article.



our native birds, says of this Carolina Pigeon that "their flight is quick, vigorous, and always accompanied by a peculiar whistling of the wings, by which they can easily be distinguished from the Wild Pigeon. They fly with great swiftness, alight on trees, fences, or on the ground indiscriminately; are exceedingly fond of berries, partridge berries, and the small acorns of the berries of the holly, the dogwood, and poke, huckleberries, partridge berries, and the small acorns of the live oak and scrub oak. They devour large quantities of gravel, and sometimes pay a visit to the kitchen garden for peas, for which they have a particular regard.

"In this part of Pennsylvania, they commence building about the beginning of May. The nest is very rudely constructed, generally in an evergreen, among the thick foliage of the vine, in an orchard, on the horizontal branches of an apple tree, and, in some cases, on the ground. It is composed of a handful of small twigs, laid with little art, on which are scattered dry, fibrous roots of plants; and in this almost flat bed are deposited two eggs of a snowy whiteness. The male and female unite in feeding the young, and they have rarely more than two broods to the season.

"The flesh of this bird is considered much superior to that of the Wild Pigeon; but its seeming confidence in man, the tenderness of its notes, and the innocence attached to its character, are, with many, its security and protection; with others, however, the tenderness of its flesh, and the sport of shooting, overcome all other considerations. About the commencement of frost, they begin to move off to the south; numbers, however, remain in Pennsylvania during the whole winter."

Referring to the nest and young again, it will be appreciated by a glance at the accompanying cut how accurately Wilson described the nest of this dove (Fig. 6), and, although the bird did not select a cedar for its home, it did build in a pine tree, which is the next thing to it. It is probable that the Carolina Dove has built, as has not a few of its congeners, this same kind of flat, poorly constructed and shiftless nest for centuries, and when it is placed high enough in the tree,

with no limbs to obstruct the view, one may easily see through a structure of this kind, readily observing the eggs or young, should either be in it—this I know from personal observation.

Like all pigeons and doves, the almost naked squabs are by no means noted for their beauty or attractiveness, and not until they gain their full plumage are they in any way engaging. On one or two occasions, while serving as surgeon at some army post in Wyoming, I have reared these doves, taking them about the time when their feathers are first in evidence. They make lovely pets, possessing many traits that appeal to the lover of birds, although many are unable to endure their constant cooing during the breeding season.

Carolina doves get along well with other species of birds in a large cage, an excellent example of which may be seen any day at the National Zoological Park,

at Washington, where a number of them are thus associated with various birds from different parts of the world, such as the widdah birds, Java sparrows, ground doves, cardinals, several sorts of finches, canaries, and so on.

Once, when out shooting near old Fort Laramie, in the territory of Wyoming, a wild Carolina dove flew past me at a tremendous rate. It had not gone over five hundred yards, when I saw it suddenly double up



SHELL OR SCALED DOVE

Fig. 13—The species here shown is the Inca Dove (*Scardafella inca*), which ranges over our southwestern border. The sexes look alike and the birds are small. Two species are known, and one writer refers to them as a "remarkable genus."

and fall to the ground. At first I did not realize what had happened to it, as the bird was evidently in the best of health and no shot had been fired in my neighborhood. Upon picking the bird up, I found its head nearly twisted off its body, and the solution of the casualty was in plain view directly over my head where I stood. At its high rate of speed, the poor bird had flown against the telegraph wire that led from Cheyenne into the Post. Evidently the poor thing had not noticed it—at least not until it was too late. Whether this would have happened to a hawk of rapid flight, such as a Duck Hawk, with its wonderful sight, it is hard to say. I am inclined to think, however, that the sight of a dove is not as quick or as keen as that of the representatives of the falconine birds—nor need it be when one remembers the habits and requirements of the species in the two groups.



In Audubon's account of this dove we find several slips, in the text as well as on his plate of the species. Our space will not admit of noticing them; but upon the other hand he invites attention to an often overlooked fact when he says: "When shot, or taken alive in the hand, this and our other species of Pigeon, lose the feathers on the slightest touch, a circumstance peculiar to the genus, and to certain gallinaceous birds."

When both species of birds were more than abundant in this country, Audubon noticed that "a few individuals mix with the Wild Pigeons, as do the latter sometimes with the Doves."

In connection with the ease with which the Carolina Dove parts with its feathers, I am reminded of an incident that occurred many years ago—or along about 1874. In those days I was living in Washington, and connected with the Army Medical Museum in a civil capacity. I was considered, since I was thirteen years of age, to be unusually expert in the making of bird skins for collections. This was well known to many of my friends in Washington, the reputation having followed me down from New England where I lived as a boy, and where I had made a collection of some three hundred bird skins of the species occurring in Fairfield County before I was thirteen years of age. While living in Washington about the above mentioned time, it was my good fortune to have as friends many of the scientific people whose homes were in the city, among them Prof. Lester F. Ward, one of the country's best known botanists, who, later on, through his work in various lines, came to be classed with the philosophers of the Western world. Professor Ward was possessed with

the desire to learn how to make a scientific bird-skin, as he expected to do some exploratory work. He came to me for instruction, which I told him I would be pleased to give; so, upon one very warm evening in the late spring, he put in an appearance at the room where I lived as a medical student, bringing with him a recently shot specimen of the Carolina Turtle Dove. As we were seated at a little table, it did not occur to me to first inform him that that species of bird invariably parted with its feathers upon the slightest provocation, and no sooner had I made the ventral incision—the initial step in removing the skin—than the feathers began to come away in the most provoking manner. Professor Ward begged to know if we "always lost that many feathers in making up a skin;" to which I replied that it was only in the case of the wild pigeon tribe and in some tropical species. I saw that the statement did not quite satisfy him—a fact that in no way lessened the trouble or my embarrassment. However, I made up the skin, and when it was dry presented him with it; but I always felt that it was hard for the Professor to believe my tale about the feathers of wild doves and pigeons coming out so easily, and I am strongly of the opinion that he never made any use of the information I had given him that evening, nor do I recall that he ever, during the rest of his life, referred to the experience again. Since then nearly half a century has passed. Professor Ward died many years ago, and I am again residing in Washington. It was only the other day that I made up a fine skin of a male starling that had been found on one of the city streets, having been frozen to death.

## New Jersey's Forester

CHARLES P. WILBER, who has been State Firewarden and Assistant State Forester of New Jersey for the past twelve years, has recently been appointed to the position of State Forester of New Jersey following the resignation of Alfred Gaskill. Mr. Wilber is a native of New Jersey. He was a graduate of Rutgers College in the class of 1905 and of the Yale Forest School in 1907.

During 1907 and 1908 he was interested in lumbering, and from 1908 to 1910 he was with the United States Forest Service in District 4, working on the National Forests in Idaho, Montana, and Utah. In 1910 he was appointed State Firewarden and Assistant Forester for New Jersey and since then has built up a wide-awake forest fire service with a splendid record of achievement and public support. He initiated a division organization in 1911, which provides for a trained state employe as firewarden in each of the three divisions of the state, to supplement and supervise the local firewarden force. In 1913 the first lookout tower was built in New Jersey; there are now 13 covering about half of the state. Mr. Wilber comes to his new position while yet a young man and no doubt will carry forward New

Jersey's forestry policy in the same progressive and constructive fashion which has characterized his work in the past.

## A Ship's Knees

ONE of the minor and yet exceedingly important articles entering into the construction of a wooden ship is the "knee." A ship knee is a right angled wooden brace used to give strength to the framing, and is fashioned from the natural crook of a tree formed by a heavy, shallow horizontal root and a section of the trunk. Knees when finished are some times as much as six or seven feet high and many of them are four feet high. The tremendous impetus to wooden shipbuilding brought about by the war, has resulted in the establishment of a sawmill at Portland, Oregon, designed exclusively for the finishing of ship knees. The timber preferred is second-growth Douglas fir, found growing in shallow soil so that the roots turn off at right angles to the trunk and thus give the proper shape. The standardized wooden ship requires some 200 knees of all sizes, while another type of wooden ship, also under construction, requires more than 160 knees.



# SPREADING THE FORESTRY IDEA

By Philip W. Ayres

Forester for the Society for Protection of New Hampshire Forests

THE Forestry movement has entered upon a new phase in the United States. Returning from France, Col. Henry S. Graves, while Chief of the United States Forest Service, called together the foresters and lumbermen of the country in a series of conferences throughout the land, pointed out to them the serious depletion in our timber supply, its unequal distribution, and asked their advice and cooperation in finding adequate remedies. This was followed by the publication in June, 1920, of Col. Wm. B. Greeley's illuminating report to the United States Senate on the timber supply. These efforts, taken together, separate the new forestry from the old. They gave us the facts about the standing timber in this country, its location, the amount of idle forest land in the midst of a great population, and the enormous freight rates that the Eastern states and cities are paying to bring wood material from the West.

Prior to these statements and publications, the forestry movement was based upon less definite knowledge and made a less definite appeal to all citizens. Many thoughtful people were interested in it; all were proud of the achievements of the Forest Service on the great forest reserves at the West; it was realized by few that these reserves will hardly meet the growing needs of the West, and that in the five or six eastern states that still export timber in excess of imports, the amount produced by all of them is not enough in a single year to meet the needs in a state like New York or Pennsylvania. Now the facts have been clearly stated for the whole country. The inevitable timber shortage is clearly before us affecting our whole economic structure. The situation is brought home to every business man and to every citizen. There is a new patriotic appeal to the whole country to arouse itself.

Many new problems appear. What is the Government's duty in providing timber for the people of the country? What must the states do? Has the time arrived when the private owner has new obligations and responsibilities to the public? Who is to bear the burden of the new systems and methods that are proposed? How shall we reforest 81,000,000 acres of waste and idle land in our midst equal in area to all of New York and Pennsylvania, or to the Kingdom of England, Scotland and Wales? The time has come to change from the old destructive lumbering, and where shall the burden fall?

These problems and relationships give a new opportunity and a new importance to the several forestry associations. It is not surprising that states hitherto unorganized, like Georgia, are starting new popular movements to educate the people and to secure immediate legislation. We welcome the new Georgia Forestry Association. The new forestry association in Maine has had

two successful meetings at which thoughtful men have emphasized the need for a wide awakening. The older associations, like that in Pennsylvania which was the first in the field, are organizing new branches. The call for forestry associations as an educational force in spreading the forestry idea has never been more clearly apparent. An association is needed in every state, with the American Forestry Association leading and inspiring them all. The entire nation must be aroused to co-operative action.

It was in this spirit that the recent meeting of the Society for Protection of New Hampshire Forests occurred at Keene, N. H., August 29 to 31. It brought together a group of people equipped with the facts and acute in suggestion and criticism of the methods to be adopted. The State and National programs were considered. Col. Greeley spoke in no uncertain terms of the need for a National forest policy that will bring the Federal Government, the several states, and the individual land owners and lumbermen all into close cooperation to meet the ever-present demand for wood material. Dr. Henry S. Drinker, newly appointed Forestry Commissioner in Pennsylvania, and President of the Pennsylvania Forestry Association, brought a statement of the situation in the Middle Atlantic States. Mr. R. S. Kellogg, of New York, spoke for the National Forestry Program Committee on the Snell bill that is pending in Congress. Mr. O. M. Porter, of New York, represented the American Paper & Pulp Association. Mr. D. L. Goodwillie, of Chicago, Chairman of the Chamber of Commerce of the United States, sent a message urging a great popular movement for the planting of trees. Elwood Wilson, accomplished forester of the Laurentide Company, in Quesbec, showed how the timber areas in Canada are being mapped by airplane photographs and utilized by Canadian manufacturers. He stated that there is no great hope for the States in the definitely limited Canadian supply.

At this meeting the New England states were well represented. Philip P. Wells, president of the Connecticut Forestry Association, spoke of the attack that certain interests in New York State are making through the legislature upon the National Waterpower Law. Professor Terry, of Middlebury College, who has charge of 30,000 acres in the college forest, represented Vermont. Professor Grose represented the Massachusetts Agricultural College and the goodly college forest under his direction. The new forest taxation law in Massachusetts was tersely set forth by Harris A. Reynolds, the vigorous Secretary of the Massachusetts Forestry Association, which precipitated a very active discussion, for in New Hampshire timber is still taxed under the old General Property taxes of one hundred and fifty years ago. The Gov-



ernor of New Hampshire, Albert O. Brown, who was for ten years President of the State Tax Commission, pointed out the serious situation when the taxes on timber become a factor in the early removal of forests before they are mature. Ex-Governor Robert P. Bass and S. F. Langdell, President of the New Hampshire Pine Lumbermen's Association, both spoke for the principle of a deferred tax on timber, or a yield tax, to be paid when the timber is cut and the owner has the wherewithal to pay. It was pointed out that not infrequently it is unprofitable to hold growing timber in New Hampshire except for speculative purposes, because the annual tax rate is sometimes greater in value than the annual growth on the timber lot.

The most notable single contribution was that from Mr. W. R. Brown, of the Brown Company, Berlin, N. H., President of the State Forestry Commission, on the results of a very careful experiment in the costs of brush burning in spruce woods that his company made in co-operation with the United States Forest Service. This paper will be printed in full in the Journal of the Society of American Foresters and will undoubtedly receive very wide reading. The point in general is that the cost of brush burning in the woods in spruce operations is approximately \$1.05 a cord, which is prohibitive. Another notable contribution was that of Mr. Allen Chamberlain, of Boston, upon the traditions and history of Monadnock Mountain, which we hope will find expression later in book form.

A marked feature of the meeting, that lasted three days, was the hospitality of the City of Keene. At the opening session the Chamber of Commerce and citizens provided a public dinner, to which were invited not only the members of the Society and the State Forestry Commission, but also by special invitation through the County Farm Bureau the leading farmers and land owners of Cheshire County, who were present to the number of nearly two hundred. These were addressed by Professor Richard Fisher, Director of the Harvard Forest School and of the College Forest at Petersham, and by Professor James W. Toumey, Dean of the Yale Forest School. Both used lantern pictures showing in detail how a woodlot may best be managed for profit. The pictures of thinning and conditions before and afterward were clear and convincing. At this dinner the Mayor of Keene, Major Orville E. Cain, presided, and presented two deeds of land, one to the State Forestry Commission, being a gift from Mr. Joel E. Poole, of Jaffrey, N. H., of a road in finished condition from the highway to the State Forest Reservation on Monad-

nock Mountain, and the other a gift to the Society for Protection of Forests from Mr. William Pearson, of Keene, and his associates, of a new forest reservation of eleven acres in extent, at the summit of City Hill in the town of Nelson, N. H. Read Admiral J. B. Murdock responded for the State Forestry Commission, of which he is a member, and Allen Hollis, Esq., responded for the Society as its President.

There was an excursion led by Professor Toumey to the one thousand acre tract of the Yale Forest School located three miles southwest of Keene. A visit was made to the extensive nurseries of seedling forest trees of the Keene Forestry Association. About forty persons visited the famous Pisgah Forest of five thousand acres in the southwestern corner of New Hampshire, twenty-five miles from Keene, and saw the largest groves of primeval pines and hemlocks that remain standing in New England. A visit was made to the valuable pine and hardwood forests on the Five Mile Drive around Keene that have been so long preserved and held for public enjoyment by Miss Mary B. Dinsmoor, and a visit was made to the famous pine plantation in Westmoreland, a tract of three acres planted forty-five years ago at a cost of \$35 for land and planting, for which the present owner paid \$1,000. It is estimated that each acre now carries from fifty to sixty thousand feet board measure. Other visits were made to the reservations of the State and of the Society for Protection of Forests on Monadnock Mountain, and to the interesting pot holes near Keene on the tract of one hundred acres that the city will acquire as a Municipal Forest.

The meeting was attractively housed at the Keene State Normal School, through the courtesy of the State Board of Education and the principal of the school, Mr. Wallace E. Mason. The guests were lodged in the dormitories, and a general school holiday atmosphere prevailed.

Among the topics for consideration were larger appropriations by the State for the purchase of forest land, new forest taxation laws, the extension of purchases in the White Mountains and Southern Appalachians under the Weeks law, larger appropriations throughout the land for the suppression of forest fires, a renewed and vigorous effort to control the white pine blister rust, which is advancing throughout New Hampshire, except where currant and gooseberry bushes have been removed, and a pledge to Colonel Greeley to support him heartily in his efforts to secure through Congressional and State action the establishment of a National forest policy that will provide a timber supply for a great people.





# TREES THE MOST NEEDED OF ALL CROPS

**P**POINTING out that Nature does not "give" trees to man any more than she gives corn or wheat but merely lends these things to man who must take care of them, the Philadelphia *North American* carried a forceful editorial on "The Crop That Must Not Fail." In part it follows: "How seldom any one considers the crop that primarily controls all other crops—the tree crop!

"It is a fact—terribly proved by most of the deserts which pockmark this sphere—that lack of care for the tree crop has cost more lives and been responsible for more material loss than all wars combined. For all soil fertility is primarily a matter of water—not only the moisture precipitated through rain, but that stored beneath the surface—and when land is denuded of trees, this latter water supply, which is the more vital of the two, gradually sinks to a point beyond reach of the roots of food-bearing plants.

Men do not seem to learn through force of example, however, and even experience is an over-rated teacher. So, starting as a nation in 1776 with an estimated 900,000,000 acres of virgin forest, we have in the 146 years of our national existence properly used one-fifth of this; negligently permitted another fifth to be destroyed by fire, and criminally wasted a third fifth in what can only be called slaughter.

Is it to be wondered that men like Pinchot and Pack have felt it a first duty to their country to cry out against such waste! Yet one cannot wonder at the attitude of the average person, for this average person never has thought of trees as a crop—the most necessary of all crops, in fact.

Nature doesn't give trees, any more than she gives corn, wheat, potatoes or cotton. She lends these riches, and man is to live on the interest earned through his care and labor.

Those who neglect or misuse these loans fail. Nation after nation thus has failed. Whole civilizations have crumbled from such causes. We do not pretend to any knowledge of the decrees of destiny, but any one with eyes to read can gain definite knowledge of the undermining factors.

Foremost among these, in every instance, has been lack or neglect of field and

forest, and since the fields productivity depends on the vigor of the forest, it is not unreasonable to rank the latter as the decisive crop. At any rate, Time has shown us that nations which desire to stand and prosper cannot permit their tree crops to fail.

*Nogales Herald*—More forest fires occurred in 1921 than during any previous year of record, but, owing to improved methods of detection and extinguishment the area burned over was below the average in extent. Notwithstanding abnor-

began to denude our forests years ago, there were many people who warned us against this practice. They told us that the day would come when we should deeply feel the loss of the timber we were wasting so shamefully.

Today we are confronted by a situation which is the outcome of our early recklessness. Very wisely we are advised by Charles Lathrop Pack, president of the American Forestry Association: "If the business men of the Lake States want a forest experiment station, and want to get a start to put 20,000,000 acres of land to work growing trees, now is the time to speak." This may sound a little bit like belated advice, but it is, in view of past prodigality, the best advice to be had.

The only question is whether we are going to give heed to it any more than we gave it to the men who years ago advised us to be saving of our timber.

*Boston Herald*—The president of the American Forestry Association says coal strikes will have no terrors when municipalities own woodland from which they can cut fuel.

*Tampa Times*—A timber denuded land is a lost land, unfit for habitation, cultivation or the sustenance of animal life. The problem must be attacked on a national scale. It is not a regional or a sectional subject. Every part of the country must do its share. The first important need is an intelligent conception of the magnitude of the problem. The second is the realization that labor, time and money must be expended.

*Geneva, N. Y., Times*—Charles Lathrop Pack, president of the American Forestry Association, admits that the rail and coal strikes are bad things, but sees in the condition which they create an added impetus for the

planting and maintaining of forests, public and private.

The municipality which has a well conducted forest preserve is less at the mercy of a shortage in other fuel supplies than other communities. The private property owner who systematically cultivates and utilizes his wood lot need have no great anxiety over diminishing coal piles or gas depletion. It is true that

## Forest Protection



—Fox—In the Rochester Democrat and Chronicle.

mal drought, public carelessness was chiefly to blame. Clearly the American public still lacks appreciation of its great natural heritage. As a people priding ourselves upon our practical outlook, the market value of our timberlands in yielding lumber for building and other purposes must be apparent.

*Detroit News*—Undoubtedly when we



# SAYS THE PHILADELPHIA NORTH AMERICAN

other fuels are more convenient and more practical in most cases than the trusty faggots from the old wood pile, but when heat is needed, the man or town with wood to burn need not go cold.

*Birmingham, Ala., Ledger*—Forest fires in the West have been the factor which contributed the increase above the average. Still, when the total for the year is contemplated, the loss in values absolutely destroyed—gone, wiped out—is shocking. And this sort of thing has been going on for years and years and will continue to go on until building materials become so dear people will then begin to pay more attention to constructing of less inflammable materials, and of proper safeguards.

*Grand Rapids Herald*—For more than a decade Michigan has been talking about reforestation. First the talk was a mere whisper. Theorists saw the end of the great white pine cut and pointed to the need for replanting. But nobody listened. Then the pine finally disappeared, or nearly so, and reforestation commenced making converts. Still there was no action worthy of the name. But now there is a

chance with the field open. Charles Lathrop Pack, president of the American Forestry Association, says: "If the business men of the Lake States want a forest experiment station, and want to get a start toward putting 20,000,000 acres of land to work growing trees, now is the time to speak." There is an opportunity for Michigan, Wisconsin and Minnesota to have such a station under federal grant. All that is required is an evidence of interest.

*Hattiesburg, Miss., American*—Ohio is planning to develop 200,000 acres of state forest and 100,000 acres of municipal forest, starting with an appropriation of \$100,000. That is certainly a modest enough beginning, when it is considered that Ohio had originally 24,000,000 acres of forests.

*Harrisburg Patriot*—There will be general agreement that arrest and punishment is not inappropriate for persons responsible for disastrous forest fires whether the act was deliberate or negligent.

*Forest and Stream*—Man has flourished from time to time without one or more of

all the other soil products, but he has never prospered without wood. The demand for wood is growing notwithstanding the discovery of substitutes, while wood is diminishing rapidly. Forests of the future must be provided by the people of today. Failure to do this will place upon present generations the guilt of adding a great burden to the cost of living and of shirking our beholden duty to civilization.

*Milwaukee Journal*—The cause of public forestry is making great headway in Wisconsin. The public is sensing, as never before, the opportunity to create stupendous wealth, to give a great impetus to industry and provide employment for

## "Spare That Tree"



—McGill—In the *Atlanta Georgian*.

many thousands in woods and mills and factories, as well as to rebeautify the state and increase exceedingly the tourist trade. The demand for forestry will continue to grow, for more and more the economic shoe will pinch and arouse people to the need for action.

*Livingston, Mont., Enterprise*—In Sweden the school teacher takes the youngsters once a week into the forests near the town and shows them how important the trees are. Sweden is a great exporter of lumber. Charles Lathrop Pack, president of the American Forestry Association, draws attention to the seriousness of the problem confronting us in the matter of future timber supplies. The lumber cut in the state of New York alone has dropped almost 60 per cent since 1910. In addition to teaching the children, the business men of the country are being taken by the hand by the American Forestry Association, which is constantly preaching on this subject. There should be no question of the need of putting millions of acres of idle lands to work millions of acres of idle lands to work.

*McGregor, Ia., Times*—In considering a national forest policy we must consider a disease. That disease is forest devastation, the American Forestry Association points out. Its effect is a slow sapping of national strength—through the steady exhaustion of the national timber supply.

*Clinton, Ia., Advertiser*—Many towns in Europe own a forest. Switzerland has 67 per cent of all her forests under town or communal ownership. These forests support the town and pay the taxes, the American Forestry Association of Washington

## Bring Back the Woods



—Siebel—In the *Knickerbocker Press*.



# FOREST INSECTS IN THE NORTHEAST

By H. B. Peirson

State Forest Entomologist of Maine

THE subject of forest insects and their control is an extremely broad one in that it covers a multitudinous number of conditions and insects, each of which has its array of successors. Too little attention has been given to the destructiveness of these insect pests and few people realize that the yearly damage to our forests by these insects is greater than the loss caused by fire. Nevertheless this is true. Over 8,000,000 acres of timberland are destroyed yearly by insects. Reports based on actual cruises show that California, between 1910-1915, lost annually 155,000,000 feet in yellow pine alone. During a period of ten years bark-beetles destroyed 1,000,000,000 feet of timber in the Black Hills of South Dakota. Probably nowhere on the continent has the damage from insects been so great as in the forests of the northeast, particularly in the spruce forests of Maine.

Years ago it was believed that trees commonly died of old age and there are many people today who still hold to this belief. Investigations have shown that trees seldom if ever die of old age—they never get the chance, the one great exception being the world famed Sequoias of the Pacific slope, which for some unknown reason have been able to withstand insect attack. Nearly every conifer which dies will, if examined, show evidence of the attack of either insects or fungi, and at least ninety per cent of the loss is due to insects. This statement refers to the ever constant dying of trees which yearly amounts to approximately one per cent of the stand and does not refer to widespread disasters as caused by fire, wind or epidemics. When conditions become favorable these insects which are ever present in the forest become numerous enough to start an epidemic such as Maine has recently experienced in the wholesale destruction of spruce and fir by the spruce budworm and is now experiencing in the destruction of spruce by bark-beetles.

The history of past outbreaks of insects in the Northeast, particularly in Maine, is of especial interest in that it throws much light on what may be expected in the present and in future outbreaks. The earliest records in regard to the dying of spruce in the forests of the North-

east is found in a letter quoted by Packard. This letter written in 1818, mentions great destruction of spruce east of the Penobscot. Very little was written on this outbreak due to the fact that at this time very little spruce was being cut, white pine being the principal timber tree lumbered. The next outbreak occurred about 1880. The destruction wrought at this time brought forth much more attention, for spruce was being cut in large quantities. Such reports as "One billion feet of spruce killed along Allagash and tributaries of the St. John River," "great destruction of spruce in North Somerset County," and that "the slump in the amount of spruce coming down the rivers after the outbreak was very noticeable," are common.

There is no question in the writer's mind but that each of these past outbreaks started with a widespread budworm epidemic followed by bark-beetle outbreaks. The last outbreak of the budworm started about 1910 and lasted until 1919. This is being followed by swarms of bark-beetles which in many localities are attacking the green spruce, and proving a serious menace to the remaining timber.

It is well worth while to review in a few words an active outbreak. In the first place the budworm is present at all times in the spruce and fir stands of northern Maine. It is present in such small numbers that little or no attention is called by its feeding, which is limited almost entirely to the tops

of the taller firs. When conditions become favorable—which in this case means the maturing of the fir—the budworm again finds an abundance of food in the sunlight, and eggs are laid by the moths on the needles at the tops of the fir trees that are in the sunlight. These eggs, which are laid from the first to the fifteenth of July, hatch in about ten days and the small caterpillars crawl into crevices in the bark beneath lichens or even into the small cones where they spin a small cocoon and thus pass the winter. They come out in the spring just before the balsam buds open and feed for three weeks or more on the foliage. An abundance of food and a favorable season means that most of the caterpillars will



BURN FOLLOWING BUDWORM OUTBREAK

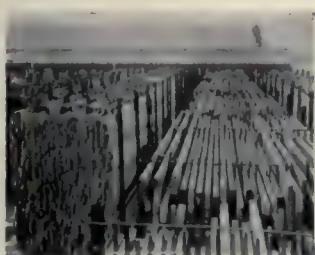
Owing to the vast amount of dry wood and tops left after a budworm epidemic, serious fires very often follow.





A general view of the seasoning and storage facilities of the Snoqualmie Falls Lumber Company, one of the fifteen complete Weyerhaeuser manufacturing units

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The illustration above shows loaded cars at the entrance to the kilns of the Snoqualmie Falls Lumber Company. Note the even stacking and the precaution to secure the load to prevent twisting and warping during processing. Stickers are inserted between courses of boards to allow even circulation and drying.

Each charge is tested in the kiln laboratory many times during the processing which forestalls over drying and other faults. When the lumber leaves the kiln it meets with the high standards set by the Weyerhaeuser organization for all its products.

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Distributing facilities backed by fifteen immense mill stocks and two great strategically located distributing plants.

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mature and later turn into moths which in turn lay large numbers of eggs. Thus it is that an epidemic starts.

The moths in flying over the forest seek out and alight on the tops of fir trees. The first year feeding is almost exclusively on fir, spruce being almost free from injury. The second season again finds the moths in flight, some of which, however, remain and lay their eggs on the spruce. This accounts for the fact that the greatest injury is to the fir. Counts made on hundreds of thousands of trees show that the relation between dead spruce and dead fir is seldom greater than two to three. This emphasizes the fact that the intensity of an outbreak depends largely upon the amount of fir that is present in



AREA OVER WHICH INSECT HAS SWEEPED

Spruce flat showing some typical budworm killed trees. The hairy moss which clings to the branches often gives the appearance of foliage in photographs.

a stand. This habit of the moths seeking fir that is growing in the sunlight accounts for the fact that spruce and fir found in mixture with hardwoods is fairly immune from budworm attack. It also accounts for the fact that spruce and fir coming up under the protection of hardwoods or budworm killed timber, is seldom damaged.

Many reasons have been given, all in good faith, for the periodic appearance of the budworm, but few of these take into account the fact that during an active outbreak the caterpillars are present in such swarms and over such a great territory that it is utterly inconceivable that either birds or parasites could check their advance. The one great factor is lack of suitable food. When the fir is gone the outbreak soon dwindles down to nothing. I do not want to detract from the great good that parasites and birds do in holding insects in check, but there

comes a time when even these agencies are like a reed before a hurricane.

This brings us to the aftermath of a budworm outbreak. Conifers, unlike hardwoods, have very little reserve food, so that a single defoliation is a very serious matter and so weakens the tree that it is easily subject to attack by bark-beetles, other insects, and fungi. The yearly dying of trees following an outbreak has been found by the Canadian authorities to be comparable "to a greatly accelerated natural thinning that takes place in the normal forest." In other words, it is the suppressed, over-mature or weakened trees that go first. The greatest loss to the forest comes not from the defoliation by the budworm itself, but from these secondary enemies which swarm into areas where there are large numbers of weakened trees. Most of the field reports mention these bark-beetles and borers as being present in large numbers in the remaining timber. Trees defoliated and thus weakened by the budworm are also made very subject to winter killing and fungi. In sample plots taken in Canada over 75% of the dying fir was



SALVAGING THE DEAD AND DYING TIMBER

The increased demand for pulpwood during the war caused much of the then dead timber to be salvaged. This problem of salvaging dead timber is still a big factor in Maine.

found to be affected by a root fungus which itself easily kills weak trees.

An insect outbreak is very much like a fire in that if found in its early stages it is easily stamped out, but if allowed to run and assume great proportions the chances of stopping it under present forest conditions, are very slight. The control of the budworm must take the form of prevention rather than control. Knowing the habits and life history of the insect which are so set that strong interference at any point will upset their development it



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*"FROM A LATH TO BRIDGE TIMBERS, SPECIFY BOGALUSA TRADE MARKED PINE—AND REST EASY."*



is possible to direct the control measures against the weakest point. In the case of the budworm this point seems to be the habit of passing the winter as first stage caterpillars that have just hatched from the eggs and that are so weak that unless suitable food is present when they emerge in the spring the caterpillars will soon die. How can this condition be brought about? Knowing that budworm outbreaks start up in isolated spots in the forest, and that it takes several seasons to gain headway enough to be a real menace to the forest, the most logical control would be for the timberland owner to send a small jobber into this area and clear out the infected stand during the winter. In the spring the young caterpillars coming out would find nothing but dry tops and would be unable to survive, their food supply having been cut off. Under ordinary conditions this method of control, which is at present being tried out in Maine, would not only be feasible but should pay for itself many fold. In the first place the infestation being located during its early stages would probably allow two seasons leeway to get into the area. The operation should, if



A TYPICAL FIRE TRAP

Type of spruce slope over which the budworm has swept, greatly increasing the fire hazard.

properly planned, practically, if not entirely, pay for itself. The protection to the surrounding timber would more than offset any financial loss due to the operation.

As to the bark-beetles—it is a common belief that these never attack green, healthy trees—this is a complete fallacy. In the normal forest it is not necessary for the beetles to attack the healthy green trees which are not particularly suited to their wants, owing to the fact that there are usually enough sickly trees or green windfalls to supply suitable feeding and breeding places. Large areas of sickly trees due to defoliation, or areas of green windfalls or even green slash mean that the bark-beetles will multiply rapidly. Ordinarily the outflow of sap or

resin caused by the feeding of the bark-beetle drowns them, thus preventing their increase. In sickly or weak trees the flow of sap is much lessened and is not a serious detriment to the development of the beetles. It can readily be seen, however, that any great outflow of sap caused by the attack of the bark-beetles would so weaken the trees that they would become suitable breeding and feeding grounds. This is exactly what takes place during a bark-beetle epidemic and the trees are killed just



THE FOOD OF THE BUDWORM

Type of spruce and fir growth in which the spruce budworm and bark-beetles create great havoc.

as surely as if they were felled, the galleries made by the bark-beetles cutting off the flow of sap. There are two main reasons for the bark-beetle outbreaks. First in importance is the weakening of vast numbers of trees by the budworm in which the bark-beetles find favorable conditions for feeding and increasing. The second cause is the large amount of fresh slash left after cuttings. The time has apparently not come when slash disposal is practicable here in Northern Maine although it is being carried on on a large scale in Canada.

Outbreaks of bark-beetles can usually be controlled without great difficulty. The habits of the bark-beetles render them vulnerable by the only method that lumbermen could economically employ. The removal and utilization or burning of the trees is the most satisfactory control and an infestation can be checked in a single season. Floating the logs early in the spring, as is the usual custom, destroys the beetles. When only a portion of an infestation can be treated, control measures should be concentrated against the centers of infestation. Remarkable work is being carried on in the West in the



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prevention of bark-beetle outbreaks. Particular emphasis is placed upon trap trees to which the beetles are attracted and then destroyed. This method of control would not, however, be applicable in most of the forest region of Maine due to the vast amount of green slash and trees weakened by the budworm. The Canadian entomologists are also obtaining remarkable results in control of bark-beetles.

The control of both budworm and bark-beetles necessitates the locating of infestations in their infancy, and in order to do this it is essential that a considerable amount of the wild lands be patrolled, and that a forest entomologist be on hand to decide upon the necessary measures to meet the many varying conditions. In Maine the forests are admirably patrolled by a system of fire wardens and their assistants who for the most part are woodsmen acquainted with the budworm and its ravages. These men with the help of foresters and lumbermen who are constantly travelling through the forests should prove fairly efficient in locating insect outbreaks. Notifying the office it will be possible in most cases to get into the area and map out the control measures necessary. In this connection a general type map of the so-called Maine Forest District is in process of making. This map will show the danger areas in the State so that it will be possible in most cases to decide whether a small infestation is likely to spread over a wide area or not. For example, an infestation located in an area that is typically hardwood or mixed softwood, is not likely to prove serious, whereas an infestation located in an area where there are vast stands of spruce and fir is likely to prove very serious.

There is serious need of more research work along the lines of control and prevention here in the Northeast. The time is fast coming, if it is not already here, when a timberland owner will think twice before he will sit still and watch a third of his timber crop wiped out. The loss in many areas is absolutely inconceivable to those who have not seen it, and reports coming into the office from timberland owners who have made cruises on their lands for the damage are astounding. James W. Sewall, a Forest Engineer of Oldtown, Maine, who is probably as well acquainted with conditions in the Maine forests as any man in the State, estimates, from a large number of cruises he and his men have made throughout the State, that one-third of the total spruce and fir crop of the State was destroyed by the last outbreak of the budworm. The damage in Quebec and New Brunswick is beyond all belief. One of the most unfortunate results of the budworm damage is that the reproduction following an outbreak is largely fir. Owing to this ever-increasing percentage of balsam in the forest the next outbreak of the budworm is going to be far more severe than the last and it is essential that control or preven-

tive measures be undertaken before an epidemic starts. Unfortunately, it is the usual custom to wait until the damage is done and then regret.

Other forest insects yearly take heavy tolls from the forests in the Northeast. The larch sawfly has so thoroughly killed off the larch or hackmatack that in most sections of the State it is a tree of the past. Poplar, birch, and maple are seriously injured by borers. The white pine weevil reduces the value of our pine crop by fully fifteen per cent, it being the direct cause of the so-called "cabbage pine" in which the tree becomes forked and much crooked.

### A WOODLAND GARROTER

**I**N the August number of AMERICAN FORESTRY appeared an account of a duel to death between a strangling fig-tree and a swamp-bay. The picture of the struggle attracted widespread attention. From Miami, Florida, comes an unsigned letter enclosing a picture of a strangler described by the writer as the largest of its kind which he has ever seen in Florida. This picture is reproduced herewith. The strangler has reached the top of an oak 50 feet in height. Its binding limbs are 22 inches wide and nine inches thick. The grip on its victim is declared to be as tight as a steel bridge buckle and the picture makes this easily believable.





## CANADIAN DEPARTMENT

By ELLWOOD WILSON

There is much interest in the Ontario situation in regard to an appointee as Commissioner of Conservation, the Premier having decided to put the care of all forest lands under this Commission. The position was offered to Dr. Judson Clark at \$10,000 per year, but he declined it. He has made several important recommendations, among them being that a technical forester should be the head of the commission, and that the logging scale should be changed from the Doyle rule and all wood sold by the Government on cubic measure. The timber resources of Ontario are so important that it is hoped that it may be possible to obtain a good practical forester to handle the job. No one can have any success unless it is possible to make appointments free from political influence and unless politics can be eliminated in the management of the Department. It is regrettable that Doctor Clark could not see his way to accept this position, as he would have been an ideal man, having already been in the Department of Lands & Forests of Ontario, before going to the West.

Mr. R. G. Broadwood, late of the Indian Forest Service, and now attached to the Forestry Staff of the University of Edinburgh, is making a trip through Canada and the United States to study conditions here. He has been very much interested in our problems, especially along the lines of utilization, but he feels that we need to pay a great deal more attention to silviculture and to getting our forests on a sustained yield basis than we have ever done previously.

The Barnjum \$5,000 prize for the best essay on the Control of the Spruce Bud Worm is about to be awarded; 277 essays were submitted, only four of which were good enough to even consider for the prize. Of these four, one stood out very much ahead of the others in a great many respects, and to this the prize will be awarded. The methods of control suggested are all very interesting and will prove of a great deal of value to the forestry departments of large limit holders and the Governments. Practically nothing new was brought out, although one new method which has been used for the control of other insect pests was suggested for the bud worm. The prize essay will be published as soon as possible, and will be of great practical interest.

Mr. Barnjum's work for the perpetuation and management on a sustained yield basis of our forests is beginning to bear fruit, and the public of Canada are becoming aroused to the necessity of taking immediate steps to stop forest fires and to

cut our timber in a more sensible and scientific way.

Mr. Barnjum is determined that his work for conservation shall not cease in his own lifetime, and is training his son in proper methods of propaganda to assist him and to carry on his work in the future. Mr. Barnjum is continually traveling through the forests of Canada in an effort to get first hand information and he has offered to take a committee of members of Parliament for a two months' trip in the woods at his own expense, so that they may decide for themselves as to the reasonableness of his fears for the future. The Government has, however, unfortunately declined his offer.

All of the conifers are seeding heavily in Eastern Canada this fall, and an effort is being made to collect sufficient seed to carry over until the next seed year shall arrive. The Laurentide Company will collect from 2,000 to 3,000 pounds of white spruce seed, together with small amounts of white and red pine.

Generally speaking, seed years occur periodically, the white spruce seeding about every three years. In certain sections, however, trees have been known to seed annually, and one white spruce tree has been steadily growing on the bank of a small river, which has seeded continually every year for five years. It might be possible, by seed selection, to develop a strain in which the seeding will be annual.

At the request of the Quebec Forest Protective Association, the Quebec Government has decided to extend the time during which permits to travel in the woods will be required, from the 15th of August to the 15th of November. This is a step in the right direction, and already the value of the permit system has been shown during the present season.

The Ontario Government is doing splendid work in the reconnaissance of the timber areas in Northern Ontario. Two hundred hours of flying and sketching have already been used and large areas covered. Recently the Laurentide Air Service has taken a strip of photographs from Remi Lake, Ontario, to Moose Factory, for engineers of the Temiskaming & Northern Ontario Railway. The distance to Hudson Bay has now shrunk very considerably, as planes are traveling back and forth, taking only about 2½ to three hours for the trip, and a knowledge of this vast and hitherto unexplored northern country is being increased by leaps and bounds, and one of the most important steps in the management of its forests will have been taken, and Ontario knows

just where its timber is located and how much there is.

Another very interesting piece of work has been done by the Fairchild Aerial Surveys Company (of Canada) Limited, in connection with the Laurentide Air Service, in photographing and making a complete report on a pulp mill plant and 450 square miles of timber limits. It was found that estimates made from the air by observation checked up within half a cord to the acre with those carefully made on the ground. The field work in compiling this report has taken six weeks; the field work alone by the old method would have taken six to eight months, and the information obtained would not have been anything like so complete or accurate. The Ontario Government, in their operations last year, found that in every case estimates made from the air checked up very closely for amounts per acre and character of timber with those made on the ground.

## A Bad Fire Season

That after much anxiety until the end of August the backbone of one of the West's most dangerous fire seasons was broken, is the consensus of the reports received by the Western Forestry and Conservation Association from public and private fire-fighting agencies throughout the five Pacific Coast states. Except in a few localities the season was one of tremendous expense and taxed all protective organizations to their utmost to prevent sweeping loss of life and property.

Although light rains relieved the tension in many places early in August, there were 2000 fires during the month. The damage has not yet been accurately reported but is comparatively small, considering the great number of fires handled, because of the prompt action and extensive forces employed by the several protective agencies. Prosecutions for carelessness and incendiarism were numerous, over 50 convictions being secured during August. Lightning was also a prolific cause of fires, while in no previous season has there been so much complaint of those caused by cigarettes. In a number of instances moonshiners have added to the troubles of patrolmen and lookouts who have investigated distant smokes to find them arising from concealed stills.





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### VAST TIMBER AREA OPENED

The largest compact body of yellow pine timber owned by the government is to be opened for sale and development, according to an announcement by the Forest Service. This is in line with the Federal policy of putting the forests of our country to their highest use, instead of locking up valuable timber resources so that they are of no benefit to the American people.

This new timber region is on the watershed of the Silvies River, in the Malheur National Forest of eastern Oregon. It covers an area of 550,000 acres and contains nearly seven billion feet of mature sawtimber.

Government foresters have worked out a plan of management for this stand of timber that provides a continuous perpetual supply of raw material for a lumber manufacturing industry to be located in the vicinity of Burns, Oregon, and capable of using from 50 to 60 million feet of logs annually.

The first block of this timber to be placed on the market is located on the Bear Valley watershed of the Silvies River, Malheur National Forest, near Burns, Oregon. The stand is estimated to contain 890 million feet of western yellow pine, Douglas fir, and lodgepole pine, which will be opened for logging development under Government regulations.

Tributary to the Bear Valley area are virgin forests containing over six billion feet of merchantable timber which will be available for future cutting. These timber units contain the finest and most extensive forests of yellow pine owned by the Government. They will be so developed, Federal experts say, that under the plan of management proposed the forests will produce an inexhaustible supply of timber.

### INSECTS MENACE FORESTS

Although forest fires are considered, and undoubtedly are, the greatest menace to the timbered and cut over area of this State, says a report from Michigan, we must not lose sight of the fact that the depredations of wood and leaf eating insects, fungi growth and disease constitute a menace of great proportions.

One eminent authority has stated, that, "Within the next ten years, Michigan would not have a standing stick of tamarack," giving as his reason the destructive instincts of the saw fly. Thousands of acres are now infested with this destructive pest attacking maturer growth. The white pine blister and the pine weevil have invaded even the reforested area, given over to young growth of white pine. It has been well established that every tree native to this State has its enemies, whether it be in the form of an insect or a disease growth and so far, other than the burning of infected areas, all measures for control have been left entirely with our insectivorous birds.





## SHADE!

"THE burning heat which glimmers over sunbaked lawns and walks robs a home of its rightful attributes of comfort and restfulness during half the year."—Grace Taylor, *The Landscape Gardening Book*.

As you look back upon the past summer, does this quotation apply to any portion of your lawn? Has the lack of trees deprived you of half the pleasure that home should give you?

Now is the time to set the matter right—the time to plant those trees that will effect the remedy. We suggest Sugar Maples. They will do more than give you comfort, they will frame your home in a festoon of green, ripening in the autumn to the orange, gold and red of Nature's tapestry.

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## FEDERAL FUNDS AID STATES

Allotments of \$400,000 of Federal funds to states cooperating with the Government in protecting forest lands from fire have just been completed by the Forest Service, United States Department of Agriculture.

This sum, together with at least an equal amount which must be supplied by the states cooperating, is expended jointly by Federal and state agencies in protecting from fire forest lands at the headwaters of navigable streams. The allotment is made on the basis of timbered area and cost of adequate protection. The Federal expenditure in any state is restricted to not over \$24,000.

According to the Forest Service, although the money is insufficient to insure adequate forest fire protection, it has in connection with state funds enabled substantial progress to be made in that direction.

Allotments to the various states are: Maine, \$24,000; New Hampshire, \$8,425; Vermont, \$4,200; Massachusetts, \$8,400; Rhode Island, \$625; Connecticut, \$3,150; New York, \$24,000; New Jersey, \$5,050; Pennsylvania, \$24,000; Maryland, \$3,850; Virginia, \$18,200; West Virginia, \$10,500; North Carolina, \$12,000; Tennessee, \$11,700; Louisiana, \$21,000; Texas, \$14,000; Ohio, \$1,050; Michigan, \$24,000; Wisconsin, \$15,000; Minnesota, \$24,000; South Dakota, \$100; Montana, \$13,725; Idaho, north, \$21,000; Idaho, south, \$2,300; Washington, \$24,000; Oregon, \$24,000; and California, \$22,750.

## GIANT TREE CENTURIES OLD

The "Great Tree of Tule" in the state of Oaxaca, after some 800 years of recorded existence, is beginning to show signs of wear and tear, says the Newark *Evening News*. This giant cypress, with a trunk so huge that thirty persons with outstretched arms can scarcely span it, is known to have been a fair-sized tree when Columbus discovered America, and history recounts that Cortes and his Spanish soldiers slept beneath its branches four centuries ago when en route to Honduras following their conquest of Mexico.

But although time has dealt kindly with the monarch, the correspondent during a recent visit to the tiny village of Santa Maria del Tule, Oaxaca, noticed that the wrinkles of age are beginning to show. There is no immediate cause for worry, however, that Tule, as the Indians affectionately call the tree, will wither away before the present generation has passed on. And even if it should, Tule has a son some fifty yards away from the parental boughs that is showing healthy signs of maintaining the family honor in the matter.

The Great Tree of Tule rises about 175 feet, and is said to be one of the largest specimens in the world. The spread of its

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branches is almost 150 feet. It stands in the court yard of a tiny church and is the only bid for popular interest made by the village of Santa Maria del Tule, whose population reveres the tree almost as much as one of its saints.



## ATTENTION, FORESTERS!

**AMERICAN FORESTRY** will print, free of charge in this column, advertisements of foresters wanting positions, or of persons having employment to offer foresters. This privilege is also extended to foresters, lumbermen and woodmen who want positions, or to persons having employment to offer such foresters, lumbermen or woodmen.

### POSITIONS WANTED

**"LAND OWNERS,** are your holdings burdensome? Perhaps there is a better way of getting an income from them or turning them into cash than has yet occurred to you. It will cost you nothing to talk your troubles over with a **LAND SPECIALIST**, temporarily unemployed, with 25 years' experience at lumbering, forestry, farming and agricultural organization in the Northwest. Write description of location, topography, soil, etc., in reply." Box 4010, care **AMERICAN FORESTRY MAGAZINE**, Washington, D. C.

**GRADUATE FORESTER**—Experienced; eight years state forest management, four years nursery, landscape and horticultural work, desires connection with firm or individual interested in forests or nurseries for commercial purposes. Address Box 4020, care **AMERICAN FORESTRY MAGAZINE**, Washington, D. C. (6-8-22)

**POSITION WANTED BY A TECHNICALLY TRAINED FORESTER** at present employed as forest manager on one of the biggest private estates in Pennsylvania; 35 years experience. Can furnish the best reference. Address Box 4030, **AMERICAN FORESTRY MAGAZINE**, Washington, D. C. (6-9-22)

**FORESTER**, University Graduate; 28 years of age; ex-service man; several years' experience in the paper industry as an executive, also sales experience, desires position. Best references. Address Box 4040, care **AMERICAN FORESTRY MAGAZINE**, Washington, D. C. (7-9-22)

**YOUNG MAN**, 32 years old; married; graduate of Cornell University; B. S., 1914; M. F., 1915, with five years' experience in the United States Forest Service. Desires position as forester with a lumber company or private estate. The best of references. Address Box 4050, care **AMERICAN FORESTRY MAGAZINE**, Washington, D. C. (7-9-22)

**FOREST ENGINEER**, a graduate with eight years experience as chief of timberland department of large Eastern paper manufacturing company is open for position with company operating Eastern spruce lands. Address Box 4055, care **AMERICAN FORESTRY MAGAZINE**, Washington, D. C. (8-10-22)

**GRADUATE FORESTER**, at present employed by a Timber and Land Development Company, desires position as Forester or Superintendent on Private Estate, or in Park work. Experienced in Tree planting and Pruning, the handling of Shrubbery, Fire Protection and Logging operations. A willing worker as well as equipped to direct others. Box 4060, care **AMERICAN FORESTRY MAGAZINE**, Washington, D. C. (9-11-22)

**FORESTER**, with ten years' experience as technical assistant and forest supervisor, now in charge of western National Forest, desires to make connection with commercial organization with opportunity of improving present position. Address Box 4065, care **AMERICAN FORESTRY MAGAZINE**, Washington, D. C.

**FORESTER**—Experienced graduate, eight years state forest management, five years' nursery and landscape practice. Agricultural and horticultural training on farm and orchard. Prepared to get results from stock, fruit or forest. Can teach or practice. Box 4070, care **AMERICAN FORESTRY MAGAZINE**, Washington, D. C. (10-12-22)

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## HOW TO KNOW TRUE MAHOGANY

Under the name of "mahogany" the wood of more than 60 different kinds of trees has at one time or another been marketed, according to the Forest Service, United States Department of Agriculture. Most of these woods come from the tropics, but sometimes even American birch and red gum are used in furniture, and sold as genuine mahogany. For the benefit of those who wish to be able to identify the various kinds of woods likely to be called mahogany the United States Department of Agriculture has issued a bulletin which tells how each kind may be distinguished.

Botanists class as "true mahogany" only trees of a single genus, called "Swietenia," of which five species are now known. True mahogany in this sense grows only in tropical America, from southern Florida and northern Mexico to northern South America, including the West Indies. But the same region furnishes other woods which may take the trade name of mahogany, as may also various woods from Africa and the Philippines, some of which are rather near relatives of true mahogany.

The question, "What is mahogany?" is therefore decidedly complex. Trade usage gives the name, with various degrees of property, to many kinds of imported woods, differing materially in cost and intrinsic quality, while the uncritical buyer may now be led to purchase as "genuine mahogany" articles manufactured from American woods of much lower value. Obviously such conditions raise difficult questions of trade ethics.

Those who wish to tell for themselves what kind of tree a piece of "mahogany" actually came from will find in Bulletin No. 1050 of the United States Department of Agriculture, The Identification of True Mahogany—Certain So-Called Mahoganies, and Some Common Substitutes, by Arthur Koehler, specialist in wood structure of the Forest Service, a carefully constructed key and detailed descriptions of the properties and structure of a considerable number of species of woods which reach the American markets under this name. A hand magnifying glass and a piece of the wood which can be cut to show structure and color are all the equipment needed to apply the key.

### FERNOW HALL

The trustees of Cornell University, at a meeting held in June, decided to officially name the Forestry Building at Cornell "Fernow Hall." This action followed a recommendation made to Dean Mann of the College of Agriculture by the Forestry Department staff and subsequently approved by the Agricultural Council. It is, of course, a well-merited recognition of Dr. Fernow's lifetime activity in forestry and it is particularly appropriate that the Forestry Building at Cornell should bear the name of the director of the first forestry school in the United States.

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### BLIGHT-INFECTED CHESTNUT AS DURABLE AS SOUND CHESTNUT

Service records collected by the United States Forest Service indicate that chestnut posts, poles, and ties cut from blight-infected trees are as durable in service as similar timber cut from healthy trees. Inspections on posts in one locality during eight years of service showed that decay progresses about as rapidly in undiseased posts as in blight-infected posts.

The blight fungus attacks living trees and grows in the bark, particularly in the cambium layer, but it does not penetrate deeply into the wood itself. The blight finally kills the tree, effectively girdling it by separating the bark from the wood.

Blight-killed chestnut should be cut and utilized as soon as possible. Allowing dead trees to check and become infected with decay in the woods shortens the service life of timbers cut from the tree.

### A "LITTLE SISTER" TO CRATER LAKE

"In the July issue of *American Forestry*, under a pretty picture of a little section of Crater Lake, Oregon," writes Mr. J. E. Pemberton, of San Francisco, "I find the following: 'There are crater lakes in other lands, but the one lake of its kind in the United States exceeds all others in beauty and magnificence of setting.'"

"Now I do not wish to depreciate in the least Crater Lake for 'beauty and magnificence of setting.' Maybe the Creator could make something more beautiful and give it a more beautiful setting if He wished; but I have no reason to suspect that He ever did; and know no reason why He should. But there is *another* crater lake in this big, beautiful country of ours; and, in the eyes of many, it is quite the equal of Crater Lake, Oregon.

"It is known as Crystal Lake, and is near Quincy, in Plumas County, California. It is of much smaller size than Crater Lake

but, otherwise, is almost a duplicate of it; has a strikingly similar 'setting' and I cannot recall any feature of either lake or its surroundings which could make it more beautiful, splendid or magnificent than the other. And adjectives are all too weak to describe either. Crater Lake is more gigantic, but that is the only advantage it has over Crystal Lake, and the advantage of mere size is a matter of opinion only. The fact that Crater Lake is so well known and its little sister crater lake, called Crystal Lake, so little known, well illustrates the maxim—'It pays to advertise.'"

### KILN DRYING DOUGLAS FIR

A study of the kiln drying of Douglas fir common lumber has been begun in the Northwest by Albert Hermann, expert from the Forest Products Laboratory of the Forest Service. This work is being carried on under a cooperative agreement between the Forest Service and the West Coast Lumbermen's Association. Up to the present time lumbermen of this region have found it impossible to kiln dry common grades of Douglas fir lumber. The object of the study is to develop suitable drying methods for different thicknesses of Douglas fir common and to determine the loss in grade in drying which may be expected by these methods.

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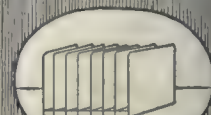
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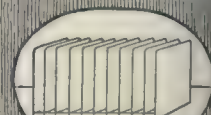
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## FORESTRY AMONG THE GIANTS

By Woodbridge Metcalf

Associate Professor of Forestry, University of California

WHEN the average person is asked to think about California and what he has heard or read about the wonders of the golden state, I presume that nine out of ten will mention the redwood tree among the first three things. So famous have those great trees become because of their age and massive proportions that most people would not consider a trip to California complete unless they had seen a grove of either the big-tree of the Sierras or the redwood of the coast, and many people have travelled from the ends of the earth in order to walk amid the great trunks while they strove to comprehend the marvels of these most ancient of living things. All of the other important western timber trees are found in several states but to California alone has been given the coast redwood and the giant big-tree. So indelibly has the image of the redwood tree become interwoven with the name California in history, song and story that it might well be emblazoned on the state flag instead of the grizzly bear. That ferocious monarch of the bear family has not been seen in California in a generation while King Sequoia will probably continue to rule over the sylvan slopes of the west coast, exacting homage from men and trees alike, for untold future generations. And it is not only the old patriarchs that will thus rule, but millions of their descendents will arise to uphold the honor of their ancient lineage and have a part in moulding the forest destiny of the ultimate west. The following discussion has to do only with the coast redwood (*Sequoia sempervirens*) which is entirely distinct both in range and

characteristics from the Sierra big-tree (*Sequoia gigantea*).

When after the gold rush of '49 there came a demand for lumber the great stands of redwood stretching from San Francisco Bay north along the coast a few miles across the Oregon line, and south to Monterey County, soon attracted attention, and logging began with the crude implements available in that early day. Recent estimates lead us to believe that at that time there were about a million four hundred thousand acres of redwood timberland containing in the neighborhood of one hundred billion board feet of timber. No one in those early days had any definite idea how much redwood timber there was. That there was enough was evident and the matter of ownership being a trivial matter, several small mills started cutting along the accessible river bottom flats in Sonoma and Mendocino counties. When Uncle Sam got around to it many years later he collected a tidy sum for timber cut on his lands in trespass—but that, of course, is another story.

The days of early logging and settlement in the redwood region were full of action and many stirring tales of those days have been handed down concerning them. One of these has to do with the origin of the name of Bull Creek, in

Humboldt County, which has become famous in recent years because the flats adjacent to its banks are said to contain the finest stand of redwoods now extant. The story as told to me by the son of one of the chief actors in the episode begins with the importation by one



AMONG THE GIANTS IN BULL CREEK FLAT, HUMBOLDT COUNTY. THIS IS SAID TO BE THE FINEST GROVE OF REDWOODS NOW STANDING. SINGLE ACRES OF TIMBER SUCH AS THIS HAVE YIELDED OVER A MILLION BOARD FEET BY ACTUAL SCALE.



of the settlers living on the Eel River of a small herd of cattle. These were secured at great expense from San Francisco and driven with difficulty over rough mountain trails to the settlement. Presiding over the herd was a bull of generous proportions and lengthy ancestry which soon became the pride of the settlement. The coast Indians in the vicinity were not very friendly to the new settlers and, regarding the bull as a fit subject for a grand feast, a band of about thirty of them stole a march on the settlement one dark night and made off with the bull which they killed without ceremony and carried to the depths of the big woods. The settlers on discovering the loss armed themselves and took up the trail with their hearts thirsting for vengeance. They came upon the barbecue while the feast was at its height, the place selected by the Indians being the banks of the little creek under the shade of the mighty trees. The whites attacked without waiting for the end of the feast and the Indians, being taken by surprise, and naturally at a disadvantage because of the heartiness of their meal, were slain to the last man. Henceforth the creek was known by its present name, but it is hard for one walking through this magnificent grove in these peaceful days to think of it as the setting for

such a bloody tragedy. Although this grove is privately owned and in close proximity to logging operations, it is possible that it may yet be purchased and preserved in its present state through the efforts of the "Save the Redwoods League."

The logging and milling along the coast in the 70's and 80's was very crude compared with present day machinery and methods. The slow plodding bull teams furnished the power for hauling the logs a short distance to the bank of the stream into which they were rolled, to lie, sometimes, for several years until a flood of high water would come. Then there would be a period of feverish activity until all the logs were safely floated down to the mill. A pocket boom of logs chained together spanned the river near its mouth in order to catch and hold the logs as they came down with the current. Sometimes during a year of extra high water the pressure of the mass of logs and the swirling cur-

rent became too much for the boom to hold and the logs, representing years of labor and millions of feet of timber, would be swept out into the ocean. This occurred at least once on each of the rivers running through the redwood region and the battered remnants of logs lying half buried in the sand along hundreds of miles of ocean beach are mute evidence to this day of such catastrophes.

The bull teams could not handle the butt logs of the largest trees so it was common practice to build a staging ten to fifteen feet high around the trees for the fallers to stand on. So high were some of these stumps left that I recently saw two of them used as platforms for summer cottage water tanks. The cottage stood beside the stump and the top of the tank was well over the peak of the cottage roof. Even after leaving such high stumps, butt logs would often offer too big a problem for the bull teams so that a section, twenty or more feet long, had to be left where it fell.

It is said that some of the early logging on the Russian River was done before double bitted axes or crosscut saws of sufficient length were available, the trees being chopped clear through with pole axes. I have seen stumps over ten feet in diameter with axe marks clear across



REDWOOD SECOND GROWTH FORMS A DELIGHTFUL SETTING FOR SUMMER COTTAGES AND HOTELS ALONG THE RUSSIAN RIVER WHICH IS ONE OF THE MOST POPULAR RECREATION AREAS IN CALIFORNIA.

and could not help marvelling at the patience and apparent dexterity of these woodsmen of an earlier day. Many of the logs which reached the mill pond were too large for the machinery and had to be split open with powder before they could be handled.

The size of these logs brings to mind the matter of maximum size of trees and the maximum yields per acre on record. There are many stories current about the size of this or that tree and it seems probable that there have been trees over 25 feet in diameter and about 375 feet in height, but at the present time trees over 16 feet in diameter are very scarce and hard to find. The largest tree in Bull Creek Flat is just over 16 feet at 4½ feet from the ground, but there must have been larger trees along the lower Eel River and on the flats adjacent to Humboldt Bay. Mr. Ivon Clar, of Guerneville, Sonoma County, tells me that there is a stump near that town which measures over 24 feet across and



that he knows of at least two other trees cut in that vicinity which were between 21 and 22 feet in diameter. According to Mr. Clar the largest tree now standing in Sonoma County is located on what is known as Eagle Nest Flat, about four miles from Guerneville. He says that about twenty years ago he assisted a member of the faculty of the University of California to measure the tree. According to those measurements, of which he kept a copy, the tree was 357 feet high and 20 feet in diameter. The bole is not symmetrical but measured 22 feet in one direction and 18 feet in the other. The tree was at that time perfectly healthy but started to die at the top about 1910. It is still alive except for the upper half of the crown and will probably live for many years. Adjacent to it is another old tree from which the flat takes its name. The earliest settlers on the Russian River remarked a large nest in its top in which a pair of ospreys, or fish eagles, annually reared their brood. About 1890 during logging operations a neighboring tree struck it in falling, demolishing the nest and breaking off thirty feet of the top of the tree. The eagles built the nest up again the following year and used it undisturbed until April, 1906, when the earthquake shook the tree so hard that the nest was shaken to pieces. Again the eagles built it up and today the Eagle nest tree and its stag-headed companion are familiar landmarks to all who go up and down the Russian River.



REDWOOD CUT-OVER LAND ABOUT A YEAR AFTER THE REMOVAL OF LOGS. CLUMPS OF SPROUTS ARE COMING UP AROUND THE OLD STUMPS BUT ARE TOO FAR APART TO PRODUCE CLEAR LUMBER. PLANTING EXPERIMENTS ARE BEING CARRIED ON WITHIN THE AREA SHOWN.

Stories of remarkable yields per acre are told about various sections of the redwood region and records close to or slightly in excess of one million board feet are quoted. The Pacific Lumber Company scaled an acre near Dyarville about a year ago which exceeded a million feet and there were probably many similar acres cut in the early days. One of the most interesting records of this kind is vouched for by John Armstrong, of Guerneville who scaled timber at various points along the coast in the eighties. I have the story through Mr. I. M. Clar, mentioned above. It seems that about 1885 Armstrong was scaling for Mr. George Guerne who owned and was logging a particularly fine redwood flat about a mile from what is now Guerneville. Mr. Guerne had an argument with one of his friends as to whether the timber would run more or less than 750,000 feet per acre. Finally a wager was made, the loser to pay

for a champagne supper at the famous old Poodle Dog Restaurant in San Francisco, and Armstrong was instructed to carefully measure off an acre and scale the logs which were cut from it. This he did, following the practice in those days of scaling each log inside the sap wood which was not considered of any value. He says that the total scale for this acre was 1,287,000 board feet and he believes it to have been the heaviest stand of timber anywhere on the Pacific Coast. The record is apparently authentic and when one considers that this is a log scale and not a stump scale the figure is still more astonishing.



DOUGLAS FIR SEED TREES LEFT ALONG THE TOP OF A RIDGE IN MENDOCINO COUNTY IN AN ATTEMPT TO GET NATURAL REPRODUCTION OF THIS SPECIES BETWEEN THE CLUMPS OF REDWOOD SPROUTS. THESE TREES AVERAGE OVER 2 FEET IN DIAMETER AND HAVE SUCCESSFULLY SURVIVED THE LOGGING FIRE AND SEVERE WINDS OF THEIR FIRST WINTER OF ISOLATION.



Mr. T. W. Hine, of the Holmes Eureka Lumber Company, has a unique record which shows the log scale for a tree which they cut some years ago on Happy Camp flat near Eureka. This tree was about fifteen feet in diameter, very tall, perfectly sound and the completed log scale was 118,000 board feet. Mr. Hine recalls another tree on this flat which was 22 feet in diameter at the stump and says that the first four logs were so heavy that they were split in quarters, each quarter making a car load. Another tree in the vicinity yielded 252 feet in length of logs before getting into the crown where it was too knotty to make good lumber. Mr. Hine says that the Hammond Lumber Company cut a tree some years ago which scaled much more than his big one mentioned above. He is under the impression that the scale was about 160,000 board feet but the figures are not available. A section of the 22 foot tree was sent to the Chicago World's Fair where it created a great sensation. If any of my readers have difficulty in visualizing the size of these logs and trees I suggest that they lay off a 22 foot distance across the front of an ordinary cottage and compare the height with some tall city building with which they are familiar. Then if they doubt the evidence of their senses I must ask them to remember that we are talking about Sequoia, the King of trees.

Logging in the redwood region did not long remain in the primitive condition mentioned above. Bull teams gave way by gradual stages to the Dolbeer donkey engine and the narrow gauge railroad, while band saw mills of large capacity replaced the small circular outfits. More and more people attracted by the size and accessibility of the timber filed on the land so that the entire acreage soon passed from the public domain to private ownership. With the increasing demand for lumber the companies have enlarged the scope of their operations and have installed the most up-to-date logging, transportation and mill machinery, while the zone of operations has moved north from San Francisco bay until it now centers in Mendocino and Humboldt counties. The annual output of the region is now about six hundred million board feet and with widening markets

the demand is ever more insistent that the product of the whirring saws be increased. A vast area of cut-over land in all stages of growth, or lack of growth, stretches to the south and along the coast. Fully a third of the original forest area has been combed with ax and saw and as one travels through these cut-over areas he is struck by the fact that with the introduction of high speed machinery and modern methods of utilization, it is becoming increasingly difficult if not impossible for nature, unaided, to reforest them with an adequate stand of second growth.

About seventy billion board feet of virgin redwood on some nine hundred thousand acres still remain to be cut and conservative estimates lead us to believe that this will last about seventy-five years. And I think I can hear you ask: "After that, what?" "Are we to look forward to seeing vast stretches of desolate, fire-swept, unproductive cut-over lands and a dead lumber industry in the land of the giants?" "Will fertile farm and grazing



A CIRCLE OF REDWOOD SPROUTS ON EAGLE NEST FLAT, RUSSIAN RIVER, 45 YEARS OLD. THE CIRCLE ABOUT THE OLD STUMP CONTAINS EIGHT FINE TREES.

lands be developed where once the redwoods towered or will these lands always produce under wise management the timber crop for which they are now so justly famous?" A good many serious minded and far seeing men both in and out of the lumber business have been asking those questions for several years; the Forestry Division of the University of California has been working on the problem and a majority of the redwood operating companies have joined forces and retained no less an authority on forest management and economics than Major D. T. Mason of Portland, Oregon, to draw up tentative plans for the future management of these lands. The problem is a large one and acquires added interest and significance because the land is all in private ownership, which means that aside from the rather remote possibility of extensive acquirement of cut-over lands by the state, measures to insure the perpetuation of the industry must be worked out by the operating companies. One of these has already adopted the principle of permanent timber production on its lands and if the others do likewise, as at present appears probable, the redwood region will in a short time present to the world the largest demonstration of forest management by private individuals.



Many phases of the problem are still to be investigated but enough observations have been made to warrant the belief that intensive forest management on redwood lands will probably yield larger and quicker returns than is possible with any other coniferous tree. It is in order to present a few of the salient facts leading to this conclusion that the following pages have been written. These will be presented as briefly and entertainingly as possible with no apology for the few necessary figures.

The story of redwood reproduction reads like a fairy tale because among all the softwood timbers of the world this species alone has the ability to sprout consistently and profusely from the stump. In fact so well developed is this tendency and so vigorous are the sprouts that probably eighty per cent of the trees in virgin redwood stands got their start in life in this manner. Stumps retain the sprouting capacity to a surprising age and a goodly proportion of even the oldest trees will sprout vigorously after being cut. The stumps moreover are wonderfully tenacious of life and will continue to send up vigorous green shoots in spite of repeated discouraging setbacks from successive fires or clearings with the ax. So serious a problem are these sprouts in the attempt to clear redwood lands for agriculture

or grazing, that many a man has given up in despair after waging a losing battle for 10 years or more against these persistent and rapidly growing sprouts. Even the hottest fire used in clearing logging slash kills but a fraction of the stumps and a newly logged area which appears

to the uninitiated to be hopelessly devastated will within a very few months be thickly dotted with bright green clumps of sprouts encircling nearly every stump. Usually several hundred and sometimes more than a thousand of these suckers push up in a circle from the root collar of the stump and engage immediately in a battle royal to determine which eight or ten will be the ultimate survivors of all this group of starters. Some suckers also arise from surface roots at a distance from the stumps and in very exceptional cases a few seedlings may start immediately and so result in a complete stand of young trees. Such fully stocked

stands of reproduction are of exceedingly rare occurrence because of the prevalence of fires in cut-over areas in past years, but enough have been ferreted out and measured during the past year to indicate that where given adequate protection they grow with astonishing rapidity. The writer had the pleasure of laying out and measuring, with the assistance of E. Fritz, a full acre sample plot in such a stand on the banks of Big River, Mendocino County, last July. We walked down the bank of the stream from the Mendocino Lumber Company camp, where we were stopping, a distance of about three or four miles, across deserted clearings where old lumber camps or homestead cabins had once stood, and through patches of second growth in different stages of development and density. Some of these stands showed severe damage by fire; others were very open in character owing to the distance apart that the old trees had stood and the lack of reproduction between the circles of sprouts, but finally we entered a stand the density of which was in startling contrast to the brilliant sunshine outside. It was like going from a sunny street into the door of a dimly lighted cathedral. When our eyes became accustomed to the dim light we could scarcely believe that they were not playing us false, for the trees about us were so large

and beautifully formed it seemed that they must be more than mere second growth. But here and there amid unmistakable circles were the massive stumps characteristic of the early day logging and we knew that we had reached the spot we were looking for. As we ran out lines around the sample



REDWOOD IN FULLY STOCKED STANDS GROWS MORE RAPIDLY IN VOLUME THAN ANY OTHER SOFTWOOD TREE IN THE WORLD. THE TREES IN THIS 48-YEAR-OLD STAND AVERAGED 24 INCHES IN DIAMETER AND 125 FEET IN HEIGHT. AN ACRE MEASURED HERE CONTAINS OVER 137,000 BOARD FEET OF LUMBER AND HAS COME TO BE KNOWN AS THE "WONDER SAMPLE PLOT."

acre and then sat down to eat our lunch first one and then another would exclaim over the density and wonderful beauty of this stand of young trees, but it was not until we had finished measuring diameters and heights and determined the age to be 48 years, that the full wonder of it was impressed upon us. The tally sheets at the end of the afternoon showed that we had measured 263 trees on that acre which averaged 125 feet in height and 24 inches in diameter breast high. The tallest trees were over 150 feet in height and a few were just over three feet in diameter breast high. In addition to the above there were also recorded five



old growth redwoods, about four feet in diameter, which had been left during the old logging operations, and 10 red alders varying from 10 to 18 inches d. b. h. I shall never forget the afternoon among those trees for computations have since shown them to have made the fastest growth in volume of any stand of softwood timber in the world. Since then a number of other plots have been measured which confirm the above figures and demonstrate the remarkable rapidity of growth of young redwood but none of these quite came up to the above record. As I had the pleasure of "discovering" the Big River plot I hope it shall continue to be the greatest, but I would not be surprised to hear that someone had

measured a plot within the region which slightly exceeded this one in yield. It has come to be known among California foresters as the "Wonder Sample Plot" and with good reason, for calculations of its volume based on future utilization to a five inch top, show a total of 137,416 board feet by the International Log Rule, or approximately 22,000 cubic feet of wood inside bark. Please remember that this includes only the second growth trees and that they were *only* 48 years old which means an average annual growth of 2660 board feet per acre. In other words the volume growth per acre per year was 460 cubic feet, or a little over five standard cords without bark.

Some readers who are familiar only with tree growth in less favored regions may exclaim, "What rubbish," or put this down as "Just another one of those California exaggerations," and I will confess that when I think of the days I spent in the north woods among the black-spruce, tamarack and jack-pine, I find the figures doubly hard to believe.

A few days ago I was looking over, with Professor Bruce, a recent Swedish publication which gave figures on yields per acre in some of their splendid and intensively managed stands. We both had to rub our eyes a bit in wonder when we found the best of these to be only slightly higher in yield than the poorest fully stocked stand of second growth redwood we have so far been able to find.

The table on the following page gives a summary of the Big River sample plot for those who may be inter-

ested in more detailed figures. Photographs made at the time indicate the density of the stand but do small justice to the beauty and symmetry of the trees. Careful examination of the photograph will reveal a large stump in the left foreground and a "mud-line" about seven feet from the ground on all the trees. The spring of 1921 was a period of exceptionally high water and this flat was inundated for a period of about ten days.



REDWOOD SECOND GROWTH IS COMING TO BE USED IN A VARIETY OF WAYS, AMONG WHICH THIS FENCE IS RATHER A BIZARRE EXAMPLE.

rather wide-spread popular belief that the trees never reproduce in this way. It does take a lot of careful searching to find seedling redwoods in most parts of the region, but where conditions are favorable they may occasionally be found in considerable numbers. I have found areas of several hundred square feet where there were two or more seedlings per square foot but soil and moisture conditions must apparently be just right at the time seeds are cast and for some months thereafter. Bare mineral soil of sandy loam texture apparently furnishes ideal conditions for germination and growth of the little trees and they can often be found on the sides of railroad cuts and fills where seed trees are near. A little patch of seedlings can occasionally be found under an old stand on the mound of earth left heaped up by an old wind-thrown tree, and I have seen them growing in loam which had collected on top of stumps or in old rotting logs.

Nevertheless redwood seedlings are rare and the writer became interested some years ago in determining why they were so scarce in natural stands and also if they could be grown successfully in quantity in the nursery. Experiments with various lots of seed have been carried on in the laboratory and forest nursery at Berkeley and in spite of early failures, it has been demonstrated that under the proper conditions redwood can be grown from seed as quickly and easily as can any other forest tree. The early failures resulted, I believe, because the seed was collected from very old trees (ring counts showed them to be 1000 years and over) while

Redwood seedlings are exceedingly rare and hard to find either in mature stands of timber or on cut over lands. Many people claim to have travelled through redwood areas for years without ever finding a tree that they could be sure originated from seed, which has given rise to a



**BIG RIVER**

Area, 1 acre. Age 48 years. Mendocino Co. Calif.  
 Measured June, 1921  
 Site Quality I.—river flat with deep alluvial soil.

Tree classes based on d. b. h. inches	Number of trees per acre	Board ft. volume International rule
2-9	48	556
10-19	115	30,432
20-29	83	75,914
30-37	17	30,514
Total	263	137,416

**REDWOOD****SAMPLE PLOT**

Basal area outside bark at d. b. h. 515 square feet.  
 Basal area inside bark at d. b. h. 400 square feet.  
 Total height of average tree, 125 feet.  
 Average height of dominant trees, total, 140 feet.  
 Cubic feet of wood inside bark using form factor 0.44—22,000.  
 Mean annual growth for 48 years, 460 cu. ft. or 2,660 board ft.  
 The following trees recorded but not included in calculations  
 Five older redwoods — — — — — 40"—52" d. b. h.  
 Ten red alders — — — — — 10"—18" d. b. h.

most of the more recent tests on seed from younger trees have given reasonably good results. Viable seed is produced by very young trees—tests last year on seed from sprouts 7 and 10 years old, germinated 2% and 16% respectively—and present indications are that the best seed comes from trees between the ages of 30 and 100 years.

Redwood cones seem to be produced in great profusion by trees of all ages. They are small (usually less than  $\frac{3}{4}$ " long) bright green in color and require but one season to mature. They should be collected when they are just about to open to expel the tiny red-brown seeds, the time varying with locality and climatic conditions from late August to early December. When collected it takes four hundred to eight hundred cones to weigh a pound; about 15% of this weight being seed. Each cone may contain a hundred or more seeds which are surrounded by tiny glistening specks of dark red resin which, with other chaff, sometimes makes up over 25% of the weight of the material extracted from the cones. The seeds are very small, the number per pound varying with different samples from less than 100,000 to more than 300,000 and it is very hard for one to realize that such mighty forest trees are able to develop from the atom of life contained in one of the tiny packages.

A good average pound of redwood seed if carefully extracted should contain not over 5% chaff or resin and about 125,000 to 150,000 clean seeds with a germinative capacity of 15 to 30% as indicated by cutting or oven tests. This means that in this pound

there are from 18,750 to 45,000 seed capable of germinating, and it might appear that we could expect to get this number of trees from planting it in the nursery. In actual practice, however, there is a very large loss after germination, of trees which are too weak to become established and those which die during the first few months from a variety of causes. In order to arrive at the probable number surviving at the end of the season from this pound we must divide the above figures by from 3 to 5 depending on the germination percent, which will leave from 4,000 to 15,000 seedlings.

Seed can be sown in out of door seedbeds at Berkeley any time from November to April. There are, however, decided advantages in fall or winter over spring sowing as seedlings from the former develop rapidly and, with average weather conditions, most of them should be large enough for field planting when one year old. Seed sown in the late spring produces trees which are mostly less than three inches high the next rainy season. About 10% can be used in field planting but the rest must be set out in transplant rows for another season. After this many of them will be 12" or over in height and therefore more expensive to handle in field planting. Stock from April sown seed

is so small at the time of transplanting that it is necessary to figure on a 15 to 20% loss during this operation.

An interesting and very significant characteristic of young redwood trees was discovered last December when a lot of two year old transplants were taken up



AN EXPERIMENTAL PLANTATION ON THE SITE OF AN OLD LOGGING CAMP. A NUMBER OF NATIVE AND INTRODUCED SPECIES ARE BEING TRIED OUT BY THE UNION LUMBER COMPANY.



for field planting. A majority of these were found with a pronounced swelling below the ground level from which projected ten to fifteen fully developed buds capable of growing immediately into sprouts should anything happen to the leader. It is thus demonstrated that sprouting capacity is inherent even in seedlings less than two years old, to be drawn on immediately in case of emergency. Because of this trait a light surface fire in a young plantation would probably not result in total loss as with most species. Also because of this it may be possible to severely prune transplants which have become too large for convenient handling in the field. Both of these points will be of considerable importance in future forestry work in the redwood region.

It is quite simple under greenhouse conditions to reproduce redwood by means of cuttings from the tops of branches or large sprouts. Such cuttings four to eight inches long if made in the fall and placed in

### REDWOOD PLANTATION

*Age 30 Years*

Chico Forestry Station, Butte County, California.

Spacing 16x16 feet—170 trees per acre.

Area .223 acres—86% survival.

Average D. B. H.—15.3 inches.

Average height—68 feet.

Maximum D. B. H.—28.9 inches.

Maximum Height—98 feet.

Basal area per acre—219 cubic feet.

Cubic ft. vol. per acre—5270 cubic feet equals 175.6 cubic feet per acre per year.

Board ft. vol. per acre—31,400 equals 1046 board feet per acre per year.

coarse bench sand will show about 25% survival in seven months. Most of these survivors show a heavy callous at the lower end of the cutting, with roots two to six inches in length, and well developed buds or new green growth. It is not known as yet whether this class of stock can be grown cheaply enough in quantity to compete with seedlings or, what is more problematical if they will develop into well formed and rapid growing trees. Another characteristic of these remarkable trees which may prove to be of great importance was discovered last December by C. O. Gerhardt, U. C., '21. In digging up a number of suckers for experimental planting he found it not uncommon for some of these to show well developed fibrous roots of their own. In many cases, especially where they arise from a long surface root, these "suckers" can be detached with the new roots intact, furnishing what I have playfully called "automatic planting stock." A number of these are being tested out this year by the Union Lumber Company on several different planting sites. Tests with a small number of these at Berkeley show 25 to 30% alive and making some new growth after six months in the ground.

Of all these possibilities for use in reforestation work probably only one or two will prove feasible after ex-

tensive trial. The number of promising leads seems to give promise that one or more will be developed on a large scale to supply the demand for planting stock that will be very pronounced, according to my way of thinking, within a few years.

Only a limited number of redwoods have been planted in the past and most of these have been single specimens or groups on lawns or in parks. It does not seem reasonable to suppose that the growth of seedlings when once established will be materially different from that of a fully stocked stand of sprouts on a similar site. The two examples which are given seem to bear out this statement and they are about the only groups of redwoods, the history of which is known, that are old enough to be of interest.

This plantation is located in the north Sacramento valley where hot dry summers and absence of fogs make the climate very different from that found in the redwood belt. It is therefore significant of the wide range of climatic conditions under which these trees will thrive and grow rapidly in volume. It should be noted that the soil was a moderately fertile gravelly loam, with good sub irrigation all the year from Big Chico Creek which flows past the plantation about 50 yards distant. All calculations in the above were made exactly the same as in the Big River plot.

There are three small groups of redwoods on the University campus at Berkeley which were raised from seed collected near Willits in 1904 and planted in 1906. Two of the groups are on good bottom land soil, the other on observatory knoll where the soil is shallow and stony. The difference in site has more than been made up in irrigation which the trees on the knoll received more frequently than the others. There are in all 44 trees which averaged at 15 years from date of planting 10.7 inches D. B. H. and 37 feet high. No calculations of volume per acre would be significant but it will be noted from the following comparison of annual growth that these trees have been doing reasonably well.

Plot	Age	Mean annual growth	
		D. B. H. inches	Height feet
Big River	48	0.50	2.60
Chico Station ...	30	0.51	2.26
Berkeley	15	0.71	2.46

Planting experiments in the Berkeley hills, which have been carried on for several years, show about 50% survival for seedling stock and 75-80% for transplant stock under conditions including heavy adobe soil with a dense grass cover which could be considered as typical of only the most unfavorable planting sites within the redwood belt. From the examples quoted it seems reasonable to conclude that growing and planting redwood should be at least as cheap and successful as it has been with any other important coniferous tree.

Having demonstrated the feasibility of raising and planting redwood someone will be sure to ask, "But why all this talk about planting? With the number of



sprouts which come up naturally after logging, is it necessary, and is anyone going to be interested in doing any?" And someone else may inquire "How about agricultural or other uses for some of this land?"

In order to give a proper perspective to the first question I will try to answer the second one first.

Redwood stump land is difficult and very expensive to clear. Most of the land lies on steep hillsides from which the coarse textured soil erodes rapidly under cultivation. Climatic and soil conditions are not conducive to a high yield per acre of agricultural products. Only 18 per cent of the land cut over to date has been devoted to farm purposes. Professor W. T. Clark, who has given much thought to the agricultural possibilities of redwood lands, points out such serious obstacles to successful fruit growing as oak root fungus and flat headed borer (both of which are ever present on tan bark oak) and emphasizes the lack of transportation facilities resulting from the broken character of the topography. Some of the best dairy land in the world is to be found on the flats along the lower Eel River but most of this was not redwood but spruce land and practically all of it is already improved. Grazing on hill lands is largely an unknown quantity as yet but judging from the experience of one or two companies who have tried it rather extensively the returns do not look promising as compared with timber production.

Conservative estimates place 10% of the total area as the absolute maximum that will ever be used for agriculture. Even this will be dependent on permanent timber production on forest lands in order to make a profitable market for agricultural products. Forestry and agriculture must go hand in hand to develop the resources of the region most extensively.

### Probable Future Use of Redwood Lands

Agriculture of all kinds - - -	140,000 acres
Barrens, rocky areas and brush-fields - - - - -	280,000 acres
Recreational areas including state and national parks, public playgrounds and summer home sites	80,000 acres
Land suited only for timber production - - - - -	900,000 acres
Total - - - - -	1,400,000 acres

In order that we may have some general notion of what land in the redwood region will be used, for, I have set down the appended figures. These are believed to be conservative and although necessarily only approximations they do bring out the overwhelming importance of timber production.

These figures allow for over 50% increase in the present agricultural area and contemplate extensive future recreational development. The barren area is made so large because of much of the older cut-over land. Reforestation on part of this may be feasible at some time in the future.

And now we come to the answer to that first question. Here are nearly a million acres of land so favorably situated as regards mildness of climate and adequacy of moisture, that it will grow softwood timber more quickly than any area of similar size in the world. Because of high humidity fire protection is less of a problem here than anywhere in the west. This means a

high degree of security for investments in growing timber. Natural reproduction of sprouts comes up after logging in such a manner as to take care of 1/3 to 1/2 of each acre, but under present methods of logging this must be supplemented in order to obtain a fully stocked stand. Unless stands are fully stocked they will have nothing like the quantity or quality of timber that is possible when enough trees are present. These supplementary trees must be provided for in one of two ways. Either logging methods must be modified so as to leave a sufficient number of seed trees per acre which is at best a doubtful silvicultural measure and well nigh impossible when high speed logging machinery is used, or the trees must be raised artificially and planted. The latter seems to me by far the most reasonable course to pursue. After logging, the land is in ideal condi-



LOOKING ACROSS THE ROWS OF REDWOOD LOGS USED FOR SEATS TOWARDS THE STAGE IN THE OPEN-AIR THEATRE, BOHEMIAN GROVE, RUSSIAN RIVER. THE TREES IN THIS FINE OLD GROVE ARE MAINTAINED AS A SETTING FOR THE ANNUAL GROVE PLAY GIVEN HERE EACH YEAR DURING JULY.



tion for setting out the trees which can be spaced exactly where they are desired and at a very reasonable cost. Because the planting is supplemental to natural reproduction, only five or six hundred trees per acre will be needed instead of double that number and the cost will be correspondingly low. If the area cut over each year is from now on completely reforested in this manner, there need never be any diminution in the annual output of redwood lumber. In seventy-five years when the last virgin stand is cut, the older second growth areas will be ready for the ax and so the process will repeat itself indefinitely. There is good reason to believe that under the intensive forest management which will be the rule in fifty to seventy-five years the present annual cut of redwood can be *increased about 50%* and maintained at that figure.

If fires had not swept over the cut-over lands at intervals since they were logged, most of them would now be supporting a fairly good second growth forest. Associated with the redwood are usually to be found Douglas fir, tanbark oak, California laurel, madrone, and towards the north, lowland white fir, Sitka spruce, western hemlock, and scattered trees of several other species. All of the hardwoods sprout vigorously and in most cases can be depended upon to produce a very fair secondary stand between the clumps of redwood sprouts if—. It seems that there must always be an "if" and in this case it can be spelled backward, which, with the addition of *re* gives the answer. It is only within the last five years that the state has set seriously

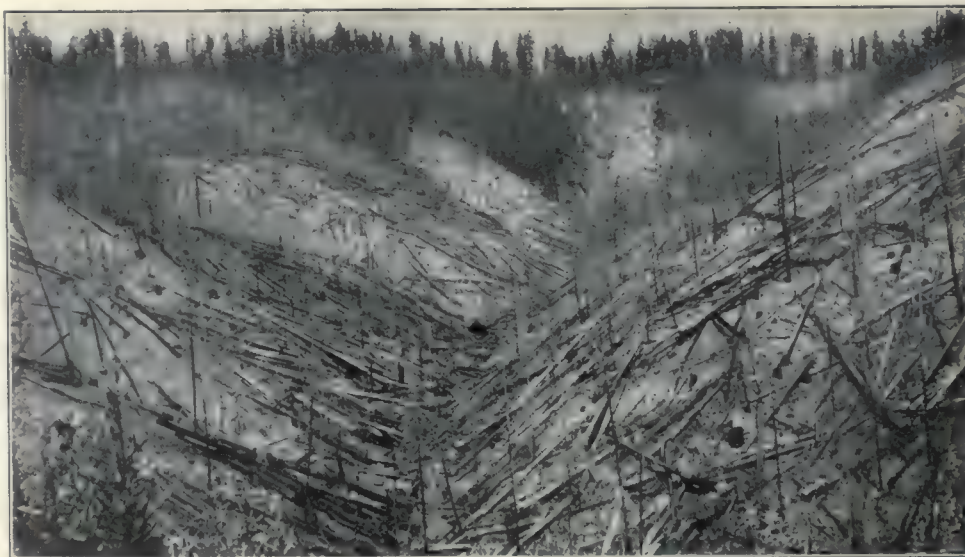
to work to combat the forest fire evil and while mature timber has been protected for several years by cooperative effort the cut-over lands were always considered until recently, of too little value for anyone to care whether fire swept them or not. Consequently it did, and each time it

killed practically all of the sprouts, weakened or destroyed the vitality of the redwood stumps and favored the spread of the oak root fungus, a serious enemy of the hardwood species. Any seed trees which were left under old logging conditions were soon killed off together with their young progeny and, as the more valuable tree species disappeared, the chaparral or dwarf species, mostly ceanothus, took their places and formed dense, impenetrable thickets in which no tree

of value can get a start. Such is the history of most of the redwood cut-over lands; the whole mountain side immediately adjacent to the wonderful flat on Big River was of this depressing character and the only reason for the difference on the flat was that the moisture conditions there made it literally too wet to burn. There are fortunately a few notable exceptions to the rule whereby some fortunate chance or design has been kept out. The Union Lumber Company has for years been able to keep most of its cut-over lands on the Noyo River free from fire and the splendid stands of mixed second growth are a cheerful augury for the future. Smaller areas of similar character may be found along the Russian River, in Marin County and in the Santa Cruz mountains, as a demonstration of what will be possible with increasing vigilance by state and land owners in the prevention of fires.

There is good reason to believe that the day of uncontrolled fires is about over. The companies are coming to realize the potential value of logged lands for future timber production and are forming cooperative associations to protect them. The first of these associations, organized some years ago in Mendocino County, has this year increased its membership until a very large part of the virgin timber and cut-over lands in the county is being protected by its rangers. The companies in Humboldt County will probably take similar action in the near future as all have agreed to assist the State Board of Forestry in its campaign of fire

prevention and suppression. This campaign involves the appointment of a district ranger in each county to compel the clearing up of dangerous areas of slash and to organize crews for rapid and efficient handling of fires. Careless campers, fishermen and automobilists are still the chief cause of



Photograph by E. Fritz.

REDWOOD AREAS DURING AND JUST AFTER LOGGING LOOK AS IF THEY HAD BEEN DEVASTATED BEYOND REDEMPTION TO ONE WHO IS NOT FAMILIAR WITH THE REMARKABLE CAPACITY OF THESE TREES FOR REPRODUCTION.

anxiety during the dry season, but many of these are being brought to justice with a stiff fine that teaches them more careful ways and furnishes a wholesome example to others that the California fire law has a kick in it which cannot be violated with impunity. Under modern methods of logging and close utilization of refuse material for firewood, there is very little inflammable matter left after logging is completed. These lands are therefore much easier to protect than they



were when logging was not so clean. The value of natural reproduction is becoming increasingly appreciated and the day when it will be supplemented with nursery grown seedlings is not far off. Truly all of these things are working together for the good of the cut-over lands and we may confidently look forward to seeing a large proportion of the 900,000 acres of virgin timber, still to be logged, grow rapidly again into timber under adequate safeguards from the worst despoiler of the forest—fire. The older areas are a more difficult problem, many of which will require long continued, painstaking and expensive effort before they can be adequately restocked with trees. This will come in time but we are for the present mainly interested in seeing successful efforts made to prevent any of the freshly cut area getting into this forlorn condition.

A number of companies, representing over 60% of the annual output of redwood, have retained Major D. T. Mason to study the problem of their individual lands and make recommendations for future forest management. The supposition is that a majority of these will proceed in the immediate future to act on these recommendations. One, the Union Lumber

Company, of Fort Bragg, has adopted the principle of permanent timber production and is proceeding on this basis. They have planned what they hope will be nearly "air tight" fire protection on all their lands as the necessary first step and a number of rangers are in the field this summer to carry it out. V. B. Davis (U. of Cal., '21) has been placed in charge of the reforestation program and is developing on the outskirts of Fort Bragg a gem of a forest nursery. Here on an area of about ten acres, within sound of the busy saw mill is growing this summer the first big crop of redwood seedlings ever raised for reforestation purposes. There are fifty seed beds of redwood seedlings and others with experimental lots of Douglas fir and Sitka spruce. He is planning to use about a half a million trees a year which will give you an idea that this spot will be a busy place in the future. The nursery is situated on a fine piece of level sandy loam soil, has a business-like little building for storage of seed and tools and the

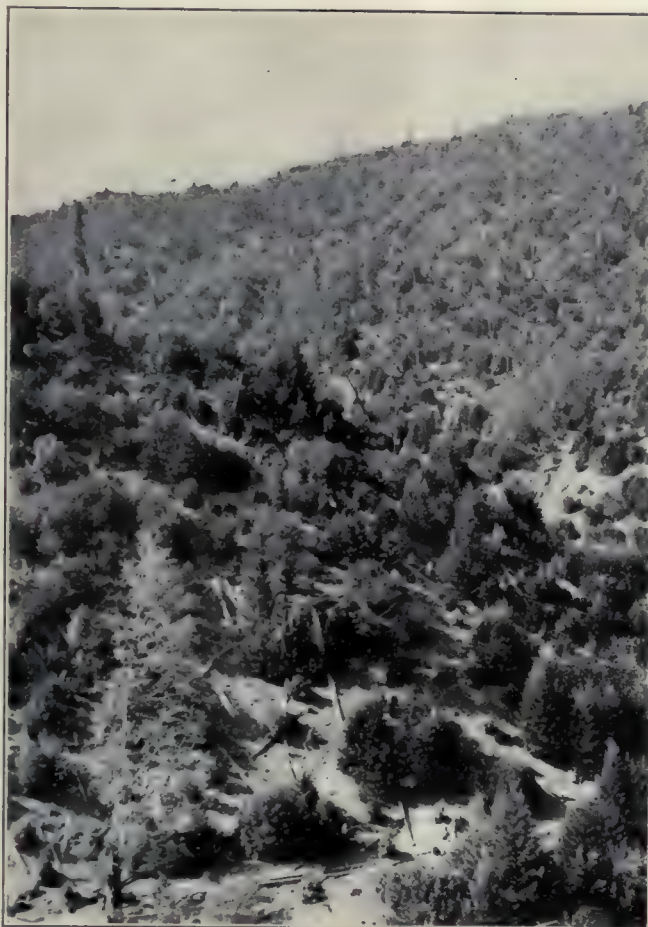
whole is surrounded by a neat white picket fence. Though but a few months old it looks the essence of stability, and residents of Fort Bragg are already pointing with pride to "our nursery." It is indeed a symbol of progress and permanence. The company is making experiments in the leaving of seed trees along ridge tops

as may be noted in the illustration, and in cooperation with the Forestry Division of the University of California is carrying on extensive planting tests of trees not native to the redwood region, which may prove to be well suited to the conditions. A number of the more valuable hardwood species such as red and white oak, black walnut, and sugar maple are being tried in the hope that some of these valuable finishing woods may be produced in the west.

The University of California through the Forestry Division is carrying on a detailed study of redwood yield on different sites. Studies of redwood seed production and germination and other reproduction methods are also in progress. Redwood second growth is in extensive use for piling, poles, and for all kinds of rustic construction. Very little has as yet been

sawn into lumber so a study is also being carried on by Professor Fritz to determine its usefulness for that and for other purposes. The United States Forest Service at the request of the California Redwood Association began last year a study of wastes which occur in redwood logging and milling as they are carried on at present in the hope that these can be largely eliminated in the future. In these and other ways the foresters and forest agencies of California are doing everything in their power to discover important facts which may assist operators to a realization of the innate possibilities of these lands.

From what has been said I think it is evident that forestry among the giants has alluring possibilities. The past year has seen the idea of permanent timber production firmly implanted in the minds of at least one group of men who are doing big things in a big way among the redwoods. With such a favorable beginning there can be little doubt that the idea will spread, take root elsewhere in the region and grow vigorously to the



REDWOOD CUT-OVER LAND ON THE NOYO RIVER SEVEN YEARS AFTER LOGGING. THE SPROUTS ARE DEVELOPING SPLENDIDLY BUT THE STAND IS TOO OPEN AND SUBJECT TO THE INVASION OF CHAPARRAL SPECIES. THIS CONDITION HAS INDUCED THE EXTENSIVE EXPERIMENTS IN ARTIFICIAL REPRODUCTION NOW BEING CARRIED ON.



end, that before long the maximum acreage shall have been placed under permanent forest management. And what, after all, could be more natural, when all people are feeling concern over vanishing timber supplies, than for far seeing men to make immediate plans to meet part of that future lumber shortage by taking advantage of conditions in this favored region and growing new giants to take the place of old ones. Here is another chance for the west coast to profit by the example of some older parts of the country and take action while there is yet time, to insure permanent maximum production at least on all redwood lands. The stage is set, the properties are ready and the first act in this forest drama is drawing the interested and sympathetic attention of a large audience. They, the American people, are hoping and expecting that it will prove to be a problem play with a happier ending than the forest tragedies of the past and I, for one have faith enough to believe that, in the land of the giants at least, they are going to see things turn out to their entire satisfaction.

In closing I would like to say just a word about another very important aspect of the redwood region. California has long been known as the play-ground of the nation and among all of its beauty spots and wonders the redwoods probably take first rank. Their size and beauty; the coolness of the summer climate in the region, and above all, its great accessibility, have combined to make the redwood country a mecca for tourists and pleasure seekers. The two best known groves, Muir Woods National Monument, and California State Redwood Park are so close to San Francisco that thousands of hikers and automobilists visit them each week. Through the efforts of the Save the Redwoods League, backed by private gifts and a \$300,000 appro-

priation from the legislature, a considerable acreage of Humboldt's finest redwoods has been added to the public playground area during the past year. These last purchases were made to include a strip of considerable width bordering the new state highway along the south fork of the Eel River; a drive which is already famous for its great beauty. One particularly noble grove has been dedicated to the memory of a gallant American officer who fell in France, and undoubtedly others will be given to the public in a like manner. Many people hope that Congress will provide money for the purchase of a National Redwood Park of several thousand acres but whether this much desired end is accomplished there is no danger that all of the old redwoods will be wiped out by logging.

Important as these old groves are, the second growth areas are destined to be of even greater importance from a recreational point of view. Already hundreds of summer resorts are being developed in cut-over areas and this is just a beginning. Mount Herman, Brookdale and other famous beauty spots in the Santa Cruz mountains; Mill Valley and the other towns clustering at the foot of Mt. Tamalpais; all of the crowded resorts along the Russian River and other places too numerous to mention have as their chief charm the beauty of redwoods among which they are built—and all these are second growth stands, though many people do not realize this fact because of the size and beauty of the trees. More and more people are each year looking to the redwoods to supply that contact with the quiet force of nature so indispensable to a perfect vacation and we may confidently look forward to a wide extension of this important use of the land of the giants. *(Photographs by the author.)*

## Proposed Memorial Tablet to Dr. Joseph Trimble Rothrock

The friends of Dr. Rothrock are arranging to place a memorial tablet to his memory in the Department of Forestry of Pennsylvania, in the Capitol Building at Harrisburg, Pennsylvania.

The State Commissioner of Forestry, Major R. Y. Stuart, has appointed the following committee to take this matter in hand: Dr. Henry S. Drinker and Colonel Henry W. Shoemaker, members of the State Forest Commission; Mr. George H. Wirt, Chief Forest Fire Warden; Professor Joseph S. Illick, Chief, Office of Research; and Major Stuart, ex-officio.

It is hoped and expected that sufficiently large

contributions to this fund will be received to enable the committee to procure a large bronze tablet containing a medallion portrait of Dr. Rothrock, executed with artistic taste, and including an inscription giving a succinct record of Dr. Rothrock's great and valuable services to the cause of forestry and to humanity.

Friends desiring to contribute will please do so by mailing check or postoffice money order to Dr. Henry S. Drinker, chairman, Merion Station, Montgomery County, Pennsylvania.

It is estimated that the cost of the memorial tablet will be about \$1500.



# FOREST TAXATION

Report of the Committee on Forest Taxation of the National Tax Association.

For a generation and more there have been complaints from those interested in forestry of the unfortunate effects of the American tax system upon forests and the enterprise of forestry. \* \* \* Suffice it to say that the earlier study of this problem succeeded in establishing certain conclusions which may be summarized briefly as follows:

## The Present Problem

(1) That as a rule forests were assessed far below their true value, and that, owing to this circumstance combined with lax administration of the tax laws, forests had not generally been subject to excessive taxation;

(2) That barring certain localities and some individual cases, taxation had not been responsible for destruction of the forests or for failure to reforest cut over lands or to practice forestry. These results have been due to other causes more potent than taxation;

(3) That the property tax is fundamentally defective when applied to the total value of land and trees of a growing forest, resulting, if strictly administered, in grossly excessive taxation of forests as compared with other forms of property yielding annual incomes;

(4) That, if at any time other conditions should become favorable to the practice of forestry as a private business enterprise, continuance of the prevailing property tax upon growing forests would prove an insufferable obstacle;

(5) That the remedy lay in the relief of growing forests from the rigors of the property tax through the more or less complete application of the yield tax;

(6) That the attempt to promote forestry by tax exemptions as embodied in earlier legislation, was quite futile;

(7) That the mature or virgin forest presented a distinct problem, toward the solution of which little had yet been accomplished.

Our first task now is to take stock of what progress has been made during the past decade. We note first of all that the principal conclusions of your previous committee, as just summarized, have stood the test of time and gained very general acceptance by those who have given attention to this subject, a result in which this Association may take justifiable pride.

## Progress in Forest Taxation During Past Decade

On the practical side of legislative achievement, the result is less gratifying. A few states have passed laws aimed to relieve the forests from the worst hardships of the general property tax and in these laws there has been a timid application of the yield tax principle. (Note details of state laws since 1913.) But these laws have not gone to the root of the matter and they have failed to produce any important practical results. They have usually been optional and

for one reason or another have generally been ignored by forest owners.

In spite of the general acceptance of the principle of the yield tax as a theoretical proposition, there can be no doubt that the plan of the pure yield tax, as recommended in the Report of the National

## Pure Yield Tax Too Extreme

Conservation Commission of 1909, has been generally regarded as too extreme and involving too many practical difficulties from the view point of the public revenue. There has developed an unmistakable public opinion to the effect that all forests must continue subject to the property tax at least upon the land and that the application of the yield tax must be limited to the trees. This position was accepted by your former committee, which in 1913 recommended for "new forests" a combination tax consisting of an annual tax on the land, valued as bare land and taxed at a rate equal to half the prevailing rate of the general property tax, together with a 10 per cent yield tax upon forest products. It is safe to say that the fundamental idea of this plan has gained general acceptance among the advocates of forest tax reform. And yet there has been a disappointing lack of legislation along this line.

On the other hand, the need of reform has increased alarmingly and is more widely recognized than ever before. The dependence of the nation upon timber and other forest products, the

## Forest Tax Reform Alarmingly Urgent

rapid decline of our forest resources, and the impending future famine are subjects which this Committee feels it need not enter into in view of the presentation made by Professor Chapman at the last Conference (1921). These matters are of vital interest to the nation; attention has been given them by such bodies as the United States Forest Service, the Chamber of Commerce of the United States, the American Forestry Association, etc. The present crisis is not due primarily to taxation. But the burden of taxation has grievously increased in the past ten years and the necessity of reform, to clear the way for the practice of private forestry, was never so urgent or so well recognized as today.

The Committee has therefore set itself the task of answering these questions: Why has the progress of forest tax legislation been so slow? Is the plan proposed by the Committee of 1913

## Why Has Tax Legislation Lagged?

still worthy of our recommendation? Is the lack of results to be ascribed to weakness in that plan? If so, how may the plan be so modified as to bring, not merely recognition of its theoretical correctness, but adoption by the legislatures of the states? In all of its inquiry the Committee has had in view the same objects as were before the former committee, stated thus in its report:



"(1) It is proposed to place upon forest owners their fair burden of taxation as compared with other taxpayers. No subsidy or special favor to forest owners is contemplated. The legitimate objects of correct forest taxation may be obtained by a change in the method of taxation without generally involving any reduction in the taxes paid at present.

"(2) The forest owner should be guaranteed that his burden of taxation will be reasonable and that its amount will bear a fairly definite ratio to the income from his forest and be fairly predictable in advance.

"(3) The various political bodies involved (States, counties, towns, etc.) should be guaranteed against any serious irregularity of income resulting from the changed method of taxing forests.

"(4) The method of taxing forests should be such as will impose no obstacle in the way of the best use of existing forests and the investment of capital in new forests. So far as consistent with the other objects stated, the tax plan should be a direct inducement to these ends."

It has become evident that the taxation of forests involves two distinct problems, relating respectively to growing forests and to native or virgin forests. (We shall divide our following discussion into two parts accordingly.)

## Two Distinct Problems

The idea of the former committee was to find a method of taxation that should take the place of all existing taxation upon forests. This meant practically to find an equitable substitute for the general property tax. It was recognized that theoretically such a substitute might be either (1) an annual tax on the original capital value of the forest, what the foresters call the "expectation value," which practically amounts to the value of the bare land, or (2) a tax on the yield of forest products whenever obtained.

In the first alternative the rate of the tax should be the prevailing rate of the property tax on wealth in general. The yield tax in order to impose a burden equivalent to the tax on other wealth, should be at a rate determined by dividing the prevailing rate of the property tax by the rate of interest. Thus, if the rate of interest were 5%, an annual tax on original capital value at 1% is equivalent to a yield tax of 20%.

Recognizing the practical obstacles to both of these alternatives, the former committee proposed a compromise involving an annual tax on the land at half the rate of the prevailing property tax and a 10 per cent yield tax on forest products. This recognized the principle that a combination of the capital tax and the yield tax should impose the same total burden as would result from either of these taxes alone; hence the rates recommended.

In the opinion of your Committee analysis of this plan brings to light two features to which may be ascribed its failure to gain more general acceptance. In the first place, the yield tax under American forest conditions would necessarily be irregular as a revenue producer. In spite of practicable devices for correcting this irregularity which were suggested,\* the public and the legislatures have been extremely cautious about accepting any plan which even remotely threatened to introduce an element of uncertainty or irregularity into the local revenue system. This is undoubtedly the chief obstacle to the practical acceptance of the yield tax.

## Defects of Former Plan

The other feature which appears as an obstacle to the adoption of the former plan is this. The plan, as proposed, was a compromise between the annual land tax and the yield tax. As such, it gave a reduced land tax, at half the rate paid by other property, to be made up later by the yield tax. This was, at the start, a concession to the forest land owner. It could be granted only where there was reason to expect the future yield tax. It was essential to make careful provision to prevent resort to the law as a means of escaping taxation on agricultural or other non-forest land.

The plan therefore involved complicated provisions seeking to restrict its application to true forest lands, limiting it to lands not exceeding a certain value, requiring that the lands be properly planted or otherwise stocked with suitable species of trees and that the young forests be properly maintained. The special forest tax was optional, to come into force only after application by the owner and inspection and approval by the state forester and to terminate whenever the owner should desire to withdraw or the state forester should decide that the forest was not being properly maintained. All of this meant complicated procedure and red tape and has doubtless gone far to cool the interest of the forest owners in the plan.

Of course any arrangement which involves a concession in the way of reduced taxation must be safeguarded in some such way as this. Some of the earlier plans of forest tax reform involved special favors to

## Tax Concessions For Growing Timber Not Successful

the forest owner in return for certain specified management of his forest under a contract with the state. Forest owners have been very reluctant to bind themselves by such contracts, and the laws containing this feature have everywhere failed to produce results. But even where there is no intention to give any ultimate favor to the forest owner, the presence of an initial concession requires some safeguard against abuse.

Hence nearly every plan of forest taxation that has appeared in the past ten years has involved restrictions upon its application similar to those contained in the plan of the former committee. This is believed to have been the chief reason for the failure of all these plans to obtain more general acceptance. Your com-

\*Cf. Fairchild, "Suggestions for a Practical Plan of Forest Taxation," Proceedings of the National Tax Association, Vol. VI, 1912.



mittee believes it is of the utmost importance to develop a plan which shall be of universal application, which shall be compulsory and not optional, and which shall not be hedged about with the red tape of applications, inspections and official sanctions.

This goal which seemed quite unattainable to those of us who were working on the problem ten years ago,

### **Recent Developments Simplify the Problem of Forest Taxation**

has, we believe, been brought within our reach by certain developments of the past decade in the general field of taxation. Two things have happened. One has been the unexpectedly rapid disintegration of the general property tax with the corresponding rise of taxes upon incomes and earnings. The other is the development of new ideas, regarding the whole system of state and local taxation, under the inspiration and guidance of the Model Tax Committee of the National Tax Association.

These developments have greatly simplified the problem of forest taxation. The old general property tax was intolerable in its application to growing forests. The task was to find some substitute, assuming that the general property tax would long continue for other property in general. The one great achievement of our earlier efforts was to develop the idea of the yield tax. Yet, rather curiously, the practical outcome has been, not the adoption of a special yield tax for forests, but the remarkable spread of the income, earnings, or yield basis for taxation in general. While we have been struggling to secure the yield principle as a special concession to the forests, the general tax reform has caught up with us.

The problem today is no longer to find a special method for taxing forests in lieu of all other taxation,

### **The Yield or Income Principle the Right Basis**

but to fit the taxation of forests into a general tax system which is itself destined to rest more and more on the yield or income basis. For example, the Model Tax Committee proposes a system of state and local taxation resting on three foundation stones: (1) the individual income tax, (2) The property tax, upon tangible property only, and (3) the business tax. The individual income tax would of course treat forest incomes like any other income. The forest owner can have no grievance here. So far as the peculiarities of his business are concerned this is the most favorable kind of tax for him. There is no special problem for us here. Likewise the business tax, where such a tax is in effect, will rest upon the income or yield basis, the one best suited to the peculiarities of forest enterprise. Some special adaptations to the business of forestry may be desirable, but at any rate the yield principle is secure.

The only problem remaining is to find a modification of the property tax which shall be suited to the peculiarities of forest enterprise. \* \* \* \*

As has been pointed out, the annual tax on the land at the rate of the ordinary property tax is all the burden that can fairly be placed upon the growing forest. To impose an additional yield tax

### **Tax the Land Annually and the Timber When Cut or Mature**

is excessive. Those who have proposed this have apparently had the feeling that to grant entire exemption of growing timber without any compensation was too great a concession or else have had in mind the mature forests, which as we shall show must be called upon for more than the land tax. As regards growing forests there is no principle either to justify a yield tax or to measure its amount, if the land is already subject to annual taxation like other property. Such an additional yield tax is justified only in consideration of a reduced rate of the land tax, as proposed by the Committee of 1913.

When we were seeking a special forest tax in lieu of all other taxes, it was felt that the annual land tax at the regular rate, paid for many years in advance of an income from the forest, was a serious hardship. Now we are assuming that forests are to be subject to the individual income tax and the business tax, and we are seeking only an adaptation of the property tax. This is not the whole tax on forests but only a part of the system. The simple solution becomes practicable and not unduly burdensome; i. e., the annual tax on the land only at the regular rate of the property tax, with entire exemption of growing trees. No additional yield tax is required so far as the property tax is concerned. With such a tax, there remains no necessity for any optional feature, for applications or inspections, for contracts or official interference with the owner's management of his forest. The law would apply to all lands and would simply have to provide that in assessing real estate no account should be taken of the value of growing trees.

The yield tax would appear, not as an additional tax in lieu of the property tax, but in the place of the business tax. The forestry business is fairly simple. It is doubtful if

### **Yield Tax Takes Place of Business Tax**

the complicated system that has been worked out for manufacturing and mercantile business is necessary or desirable for forests. The simple tax on the stumpage value of forest products corresponds fairly well to a tax on net income and would probably be the best means of applying the business tax principle to the forests. The rate of the yield tax should correspond to the rate of the business tax on other enterprises. Five per cent is suggested as a reasonable rate where circumstances do not indicate the proper rate.



We summarize our plan for the taxation of growing forests as follows:

### Committee's Plan Summarized

(1) The law shall provide criteria for determining what is "mature timber."

(2) All trees other than mature timber shall be exempt from taxation, and in assessing land no account should be taken of the value of any trees except mature timber. Forest lands shall be assessed no higher than similar bare lands in the neighborhood.

(3) All forest products (with the exception of certain small quantities taken by the owner or the tenant for his own use) shall be subject to a yield tax at a rate corresponding to the business tax on other businesses. The rate would perhaps ordinarily be in the neighborhood of 5 per cent. The yield tax should be administered by state officers, and the proceeds distributed to the town or counties.

(4) It is assumed that if there is an individual income tax, forest incomes will be treated exactly like other incomes.

(5) Certain administrative problems will arise, particularly in connection with the yield tax. Since this matter has been fully treated in previous reports and addresses, already referred to, the Committee regards further discussion unnecessary. No serious obstacle is to be anticipated.

At two points this plan may require further defense.

(1) The old general property tax was defective because

### Plan Assures Owners Reasonable and Definite Taxation

(a) by taxing the total value of land and trees it imposed an excessive burden upon the growing forest and (b) it placed on the owner the inconvenient obligation to pay annual taxes for years before any income was realized. The first of these defects is avoided by exempting the trees. The second remains, though greatly reduced. Under all the circumstances it is felt that this inconvenience must be accepted by the forest owner. In return he is guaranteed a reasonable tax burden made up of a small and fairly certain annual tax on his land and a yield tax at a definite rate.

(2) The chief objection to the yield tax, as already stated, is the irregularity of the resulting revenue.

### Irregularity of Public Revenue Less Marked

This difficulty is present in the Committee's plan. It should be noted, however, that the irregularity resulting from a moderate yield tax (in the neighborhood of 5 per cent) combined with a steady annual tax on the land is quite different from the result of an exclusive yield tax (at the rate of 20 per cent or thereabouts). If nevertheless this difficulty appears serious, there are ways by which it may be avoided. Six possible methods were suggested by the Chairman in his address before the Sixth Conference in 1912. It is not necessary to rehearse them here. One of these suggested methods, involving advance annual payments by the owner to be later deducted with interest from the yield tax, has recently

been taken up and skillfully developed by Mr. Murphy of the Forest Service. The Committee believes that in most states the irregularity resulting from the yield tax as recommended will not be serious, whereas for any state which finds this a serious matter there are adequate remedies.

Our discussion thus far has related to the growing forest only, with the purpose of devising a method of taxation which shall be equitable to all parties concerned and shall not be an obstacle to the

### The Taxation of Mature Timber

reforestation of cut-over lands or the development of new forests. The mature forest presents quite another problem. We are here dealing with a full-grown product. Two cases appear, depending primarily on whether the timber is actually marketable or not. By marketable timber we mean mature timber which is accessible and so located with respect to market and transportation facilities that its immediate marketing is possible. Whether it actually is being marketed depends upon the owner's judgment as to the most favorable time. There is nothing in the theory of the property tax to affect adversely marketable mature timber. A property tax fairly drawn and administered with even-handed justice upon all owners of taxable property would give the owner of such mature timber no ground for complaint. Of course, the obvious rejoinder is that this ideally perfect property tax exists only in the imagination. The real property tax, as we know it, is badly drawn and more badly administered. Its application is unequal and unjust. If forests of marketable mature timber are taxed more heavily in proportion to their true value than other classes of wealth, the forest owners have a grievance, but it is in no way different from the grievance of any other property owner under similar treatment.

On the other hand, when timber is so located that its present marketing is not possible, the situation is in

### Tax Burdens on Virgin Stumpage Growing Heavier

theory similar to that of the growing forest. We have here a form of capital whose income is deferred to the more or less distant future. It is true that the timber is mature. But if other causes beyond the owner's control defer its marketing, the result is the same. It is the fact of the necessarily deferred income, rather than the particular cause of that fact, which makes the annual tax on capital value work injustice. \* \* \*

Careful investigation made ten to fifteen years ago, to which reference has been made, showed that on the whole forests had not, up to that time, been taxed excessively. Probably they had on the whole been assessed more leniently than other classes of wealth. But it was pointed out at that time that the epoch of lenient taxation was drawing to a close and that heavier and even excessive taxation might be expected in the near future. The past decade has fully justified this prophecy. Tax burdens in general have become enormously heavier, and there is plenty of evidence to show that, in the great



virgin timber states, at least, the burden has been increasing more rapidly on timber than on other wealth. The owners of large tracts of mature or virgin timber have reason to be alarmed.

What makes the matter of public interest is this: The mature forests represent a national resource of vital importance to the wellbeing of the people. This store of wealth has been gradually built up by nature during many past years. Its utilization has for some time been proceeding more rapidly than its restoration by natural growth and plantation. The store is diminishing and virtual exhaustion may be foreseen in the not distant future. It must be repeated that taxation is not the cause of this condition and that no change in tax methods will materially alter the situation. This is not primarily a tax problem. Taxation becomes a consideration in one way only. If through the faulty administration of the property tax mature timber is subjected to an excessive burden of taxes, the owner, already burdened with heavy carrying charges, may find himself forced to market timber before the economical time, suffering less himself and hastening unduly the depletion of the nation's forest resources.

**Where Public Interest Enters**

Of course, by this same token, the forest owner would benefit and the exhaustion of the forests be perhaps retarded by special favors in the way of reduced taxes or entire tax exemption. But this is a program which your committee has refused to consider, standing firmly on its purpose to find a tax system which shall place on forest owners their fair burden of taxation, no more, but also no less, as compared with other tax payers. It is not believed that the public interest as a whole has anything to gain through the granting of special tax favors to this class of tax payers.

On the other hand, the forest owner is entitled to fair treatment. He has the right to ask two things:

### Forest Owner Entitled To Fair Treatment

(1) that his total tax burden shall not be excessive as compared with other tax payers and (2) that the amounts exacted from him shall not be arbitrary and uncertain. The latter consideration is possibly even more important than the former. It is especially vital to the forest owner, whose income may be long deferred while interest and other expenses run steadily on. There is danger that the just taxation to which the forest owner is entitled may be denied him, either through the inherent defects of the property tax as applied to forests whose cutting is necessarily deferred, or through the assessment of marketable timber at values relatively higher than are placed upon other taxable wealth.

The problem of taxing mature timber has not received the study which has been devoted to the taxation of growing forests, and the solution is not so obvious. The former committee (in 1913) made certain tentative recommendations, while admitting frankly that it was not prepared to say that its plan would fit the conditions in

those states of the Pacific Coast, the south, and the extreme northeast where the most extensive areas of virgin forest are found and where the problem is most serious. The sub-committee of the National Conservation Congress also made suggestions, likewise somewhat tentative.

In seeking a solution, your committee starts with these principles: (1) that mature timber should be taxed

### Tax Forests on Even Terms With Other Wealth

so far as possible, on a par with other wealth and business; (2) if there is an individual income tax, it should relate to forest income the same as any other income; (3) where there is a special business tax, it should take the form of a yield tax for forest enterprise. These principles are the same as have been recommended for growing forests and their discussion in that section applies generally here; (4) the property tax as applied to marketable mature forests should be the equivalent of an annual tax upon the land and trees, assessed in the same ratio to true value as prevails for other taxable property in general, and at the same rates as are applied to other wealth; (5) the property tax when applied to forests of mature timber which will not be marketable till some time in the future should take account of the fact of deferred income.

It is the practical application of the last two principles which presents the difficult problem. As has been pointed out, the owner of marketable mature timber has no reason to complain if the property tax is applied to his forest on even terms with other kinds of property. But this is not enough for the owner of unmarketable mature timber. Yet the legal separation for taxation of these two classes of mature timber is probably impracticable. There would be too much of personal judgment involved, and disputes and unequal treatment would almost certainly follow. What we must seek is an equitable method of applying the property tax or its equivalent to all mature forests.

From the point of view of the forest owner, the most favorable solution would probably be the pure yield tax.

### Why the Pure Yield Tax Won't Work

But the pure yield tax will not do, for two reasons at least: (1) the owner of marketable mature timber, who chooses to hold it uncut for sale in the distant future or as a pleasure park or hunting ground, must not be permitted thus to postpone his tax contribution indefinitely or avoid it altogether; (2) the resulting irregularity of public revenue would be a serious matter, especially in those localities where virgin timber composed a large part of the taxable wealth, these being the very communities where the problem of the taxation of mature timber is most acute. As has been observed heretofore in this report, there are ways of adjusting this irregularity of revenue, but nevertheless the public appears unwilling to take the chance. There are other serious difficulties, both theoretical and practical. We are quite safe in concluding that the pure yield tax is not the solution.



The combination of an annual land tax and a yield tax meets about the same objection. The principal value of a mature forest is in the timber rather than the land. Introduction of the annual land tax, therefore, fails to meet the objections to the pure yield tax. At best it mitigates them slightly.

Taking everything into consideration, your Committee is of the opinion that the only practicable solution of

### Property Tax Offers Best Solution for Mature Forests

this problem is to seek to make the property tax as equitable and convenient as may be. In particular every effort should be made to insure a fair assessment of forest property. This means not only an accurate valuation. It requires also that the assessed value of forest property shall not bear a higher ratio to its true value than the prevailing ratio of assessed valuations to the true value of all taxable property. Assessment at the hands of a State officer or board would doubtless assure uniformity and certainty in the assessments. There is

always the danger, however, that such efficient assessment by arriving at the true value of forest property will unjustly burden such property as compared with other property not so efficiently assessed. Equality in taxation must be real equality, not merely formal.

It is admitted that this solution is more favorable to the forest of marketable timber than to that which is for the present not marketable. But the committee has thus far been unable to discover a practicable means of reconciling this discrepancy. As a matter of fact the inequality would probably exist more in theory than in practice. It is hardly to be supposed that the assessors would take pains to raise the assessment of unmarketable timber each year to take account of the approach of the date of cutting, the possibility of this being what makes the property tax unjust to such forests. If the assessors seek honestly to value all mature forests on the same basis as other taxable wealth it is probable that little injustice will be done. If such treatment could be guaranteed, the owners of mature timber would probably have little reason to complain.

## BUSINESS SEES TIMBER SHORTAGE

TEN years ago, I took no stock in this talk of a timber shortage," said W. DuB. Brookings, Manager of the National Resources Production Department of the United States Chamber of Commerce, in addressing a meeting of the National Wholesale Lumber Dealers Association in Washington. "Today I can see the clouds gathering on the horizon. We are using timber much faster than it grows. Substitutes may lower the per capita consumption, but the total consumption for the nation will not decrease. And what is important to note is that low per capita consumption results from high prices and inability to get lumber, and not as is generally believed, from preference for substitutes. Norway and Sweden, lumber countries, use as much lumber per capita as the United States. Italy and Spain would use as much also if they could get it at a reasonable price.

"The United States has had the cheapest lumber in the world and the free use of our forests has been a factor in our unparalleled economic growth—but was it wise to have permitted the great supplies near our eastern and middle western industrial centers to become exhausted? Picture those magnificent 12-foot fir trees of Oregon and Washington being cut into one-by-four and two-by-four and brought through the canal for use on the Atlantic Coast, while almost at our doors, are the Southern States, the greatest hothouse for growing timber in the world, with millions of acres suitable only for growing timber, lying idle.

"Have these changes been of benefit to the lumber manufacturers and distributors, taking an average over a period of years and considering these industries as permanent factors in American business life? It has kept the manufacturers on the move, and brought many problems to the wholesaler. The longer the freight haul the higher the cost of freight; the higher the price the greater the investment in doing business; the higher the

price to the consumer the quicker he turns to substitutes. The increase in freight charges on lumber over former years for the city of Chicago alone is said to be \$22,000,000, a basis for judging the total burden on the country as a whole for not having timber supplies growing nearer the great industrial centers.

"Lumbermen may differ as to how to insure a steady and ample supply of timber but they agree that the millions of acres of former timber lands unsuitable for agriculture, now lying idle in every state that has ever produced timber in large amounts, should in some way be put to work."



Photograph by U. S. Forest Service.

### THE ECONOMY OF WOOD PRESERVATION

The broken post above was weakened by decay to the point of failure after one year's service in the mine. It was sound when installed, but was not treated with a preservative. The post next to it, which was treated with a preservative and placed at the same time, remains sound and uninfected by decay. Two other untreated timbers in the foreground show fungus attack.



# TREE FELLING AS A SPORT

By W. Gilman Thompson, M. D.

A FORM of labor which from the stone age to the present time has attracted many of the world's great men surely possesses something more than mere drudgery, such as the compelling of interest, of observation and skill. All this and more is to be found in tree felling, which, regarded as a sport, has much analogy with golf. The swing of the ax and the swing of the club call into play similar muscles; one must plan carefully the direction of the stroke and keep the eye unvaryingly upon the objective point of the blow, or it is easy to "slice" in the one case the ball, in the other the toes! A firm stand upon good footing, a straight knee and a full swing are equally essential. The direction of the drive must be carefully planned, for the tree, like the ball, which does not lie where it should best be placed, may involve much vain effort in extricating it.

"If the tree falleth toward the south or toward the north, in the place where the tree falleth there shall it be." (Ecclesiastes II.3.)

But as there are analogies there are differences and the chief divergence between these sports lies in the important fact that in the case of the tree, once having hit

the blooming thing it is still there and one does not have to hunt over a ten-acre lot to find it.

Probably no single stroke of the ax ever resulted in such lasting fame, as in the storied case of George Washington and his cherry tree. Certainly no such controversy has arisen over the efforts of other "regular fellers." Did the youthful George merely wish to try a new ax, or did he wish easier access to the cherries? Was it the ethical question involved when he exclaimed, "I cannot tell a lie, father," meaning that he had already gone the limit in this direction? And where was he going so suddenly when he "took a hack at the tree?"

These and similar controversial matters have puzzled youthful Americans for so many generations that it would seem futile to attempt to solve them now. Let us rather look upon the bright side of the picture, that of a boy acquiring at an early age a taste for an exercise which is healthful, entertaining and productive, which begets skill, determination and vigor and which, from its effect upon the development of his character, doubtless contributed in no small measure to the greatness of the man. The fact that after all it was a phantom cherry



ABRAHAM LINCOLN SPLITTING FENCE RAILS



tree, rooted only in the mind of the historian, should not be permitted to detract from the usefulness of so valuable a legend for mankind.

As a sport, tree felling presents every gradation, for the beginner may choose a sapling and work up to trees of the largest growth, and he may, as he acquires the true art of the game, select trees of increasing hardness, until the experienced chopper can almost tell with his eyes closed upon what manner of wood his ax strikes. Into the basswood, for instance, the blade sinks as readily almost as a knife into a hardened cheese, and the broad-leaved poplar is almost as soft. But let the novice beware of the ironwood and yellow birch, and stand well from under, for a glancing blow may easily recoil upon the chopper. There is interest, too, in making progress with the size of the chips and keeping the advancing cut smooth and even. What a pleasure it is to watch the experienced woodsmen attack a large chestnut with unerring precision, sending chips six or eight inches long flying many feet off from the stem. Not a stroke of the ringing blows is wasted and the incision is kept as clean as if made by a saw, until the giant begins to quiver, then to sway, and with gathering momentum finally goes down between its fellows, cracking and crashing until it strikes the earth with a mighty thud, the butt bounding up again in final protest at its fate. To do this gives one an exciting sense of power and achievement well worth the energy which it costs.

Most of the professional or commercial tree felling is done in winter when the felling of the tree is not hampered by leaves; the wood is dry and hard, being free from sap, and the covering of snow makes it easier to haul out the timber. But for the amateur sportsman vacation time is usually in mid-summer when the flow of sap makes conditions quite different and more skill is required to prevent the leafy branches from becoming entangled and preventing a clear fall. In thickly studded growths a dislodged but still standing tall tree may have to be recut part way along the butt, a process often difficult and hazardous.

The wood is more fragrant in the summer and no small part of the pleasure of the sport is in developing the resinous, aromatic odors of such trees as freshly cut pine or cedar or the fragrance of the chips from birch and other trees. The color, too, of the fresh chips presents great variety, from the almost pure white of the basswood and faint yellow white of the canoe birch through the brown shades of chestnut and oak to the red of the cedar and fascinating shades of green and orange in a giant sumac.

The tree sportsman learns to be as critical of his axes as the golfer of his clubs, for a poor selection of implements readily spoils the game and dullness or breaking may be a source of real danger. The weight and balance of the haft, and the length, curve and tension of the handle must all be carefully considered to yield the best results.

Where may the amateur obtain the trees for his sport? In a true arcadia of course everyone should have his own "back wood lot" where he can enjoy the pride of cutting his own trees and doing as he will with them. But any farmer will readily grant the privilege to an enthusiast of cutting in his woods under direction. He is always glad of more firewood and every wood lot can be benefitted by "improvement cuttings," to use the forester's term. There are always dead trees to be removed, and always crooked or deformed trees, or trees which are crowding others and interfering with their growth, and it decidedly enhances the value of the property to have them cut



PRESIDENT HARDING CAN WIELD AN AX

down. It would be an interesting experiment to have the members of a golf club adjourn *en toutes* some fine Sunday morning into a nearby wood lot and measure the equivalent of the strokes for 36 holes as applied to producing cordwood! The caddies could be released for Sunday School and the woods would re-echo with "fore" as a warning to get out from under when the trees fell! Although somewhat different vocabulary otherwise would be required, prowess might still be the subject of boasting and the results in exercise would be quite similar in forest and in fair green. Thirty-six well directed



strokes of the ax may fell a fair-sized tree, so even Bogie might have several trees to his score!

One of the earliest references in literature to the ethical lessons to be derived from skillful tree felling occurs in the recital of one of Nebuchadnezzar's dreams. "In the visions of mine head upon my bed," quoth he, it was commanded "to hew down the tree and cut off his branches, shake off his leaves, and scatter his fruit; let the beasts get away from under it and the fowls from his branches. Nevertheless leave the stump of his roots in the earth, even with a band of iron and brass." Which Daniel interpreted, as whereas it was "commanded to leave the stump of the tree roots, thy Kingdom shall be sure unto thee, after that thou shalt have known that the heavens do rule." (Daniel IV. 10-26.)

This may be sound theological doctrine but it exhibits a meagre knowledge of forestry. Job fell into a similar error when he said: "For there is hope of a tree if it be cut down that it will sprout again and that the tender branch thereof will not cease." (Job XIV. 7.) In the limited flora of Palestine this may apply to the olive and

the fig tree, although it certainly does not to the cedar. In our forests are many hardwood trees like the basswood and oak, which it is true, send up vigorous sprouts when the parent stem has been cut away, but they usually do not thrive long and practically never reproduce trees of any symmetry or value. The sprouts are vigorous because they already possess an extensive root system, but the processes of decay soon enter the unprotected surface of the stump (not bound with "bands of iron and brass,") travel down into the earth and work up into the stems of the ground shoots or "sprouts." Apparent exceptions are found in the willow and chestnut, but the willow is so hardy that it appears to thrive on abuse, and sprouts may reach a height of 30 or 40 feet, springing from old trunks which are so split and decayed that wide holes let the daylight pass through them. But the sprouts are never so strong as the parent tree. The chestnut is perhaps the most vigorous sprouter of all, particularly in its dying effort to resist the fungus which so lately has proved its mortal enemy. New England forests, until recently, were full of tall chestnut



Photograph by Brown Bros.

GLADSTONE, ENGLAND'S GREAT STATESMAN, WITH HIS FAMILY AT HAWARDEN, ENGLAND, ENGAGED IN HIS FAVORITE EXERCISE.



sprouts, in groups of three or four or more, springing from the roots of an old stump, cut perhaps in making a clearing, forty years before. They look like excellent telephone poles, but when cut it is found that their stems often are hollow with decay to a height of eight or ten feet above the ground. All this has a lesson for those who for sentimental reasons would preserve the stump of a favorite tree in the front yard or upon the lawn, camouflaging the sordidness of its decay with woodbine or trumpet creeper. Such a stump will never thrive again and with due respect to Job, "the tender branch thereof" will "cease." More than that, it harbors many varieties of fungi and pestiferous insects which latter are a menace to other vegetation, although the species of fungi of dead trees do not attack the living. It follows that in scientific tree felling it is not necessary to consider the stump provided it is cut near enough to the ground to prevent waste of wood.

Horace Greeley must have acquired his fondness for wielding the ax in the five years which he spent as a youth working upon his father's farm at Westhaven, Vermont, and that he continued it in advanced life as a



COLONEL ROOSEVELT MAKING THE CHIPS FLY



HORACE GREELEY AS A TREE CHOPPER

means of exercise and recreation is attested by the picture which represents him in shirt sleeves with a large ax over his shoulder ready to cope with any giant of the forest. His biographer states that much of his early reading was done by the light of pine knots after the day's farm work was done, and he doubtless contributed to their cutting.

It is only fair to state that tree felling, like the sport of boxing, may at times be used as an appeal to the baser passions of mankind. Thus the former Kaiser is reported to have turned to it as a vent for his emotions at a time of life when checkers or backgammon might seem more alluring. There is, however, no fixed age



limit to the sport of tree cutting, covering as it does, the seven ages of man, from the youth of Washington to the old age of Gladstone. One may picture the whilom Kaiser going forth with eager strides, battle-ax in hand, to slay the oncoming cohorts of the Allies as represented to his distorted mind by the serried ranks of the Dutch beeches, he being arrayed erewhile in the majesty of Dutch breeches, and as he "strafts" and "strafts" one may almost hear him mutter between clenched teeth, "take that and that and THAT," very much as one might chastise a most obstreperous boy in the woodshed!

But it is a poor tree that does not grow both ways and in Jonathan's parable, (Judges IX, 8), we read: "The trees went forth on a time to anoint a King over them." One after another, however, all declined as being otherwise more usefully employed in growing roots and branches and so they finally were reduced to electing a bramble!

A fondness for the sport of tree felling leads one naturally to an interest in forestry and to observation of the habits, forms and varieties of individual trees, their rate of growth, their relations to each other in their struggle upward to the light and air in densely covered areas, and further to their economic value and the specialization in the uses of the different kinds of wood.

Each species of tree in addition to general uses such as those of firewood, boarding, etc., has one or several special uses for which it is peculiarly fitted. These oftentimes are suggested on cutting down the tree through noting its relative hardness, its graining, mode and degree of splitting, etc. Thus the chestnut is selected for the framework of pianos and coffins to be veneered afterward with other woods which take a better polish. The willow is used in manufacturing black powder and artificial legs.

the poplar for fruit boxes, spools, etc. Moreover, each tree is its own biographer, and the cross section of even a long-time cut and decaying stump presents an open page to one who has learned to read it. From the bark and grain of the wood is to be told the species and from the number of concentric rings the age, for the growing tree must form a new ring each year. More than this, the thickness of the rings varies with the seasonal conditions of light, air currents and moisture, so that under exceptionally favorable conditions the rings may be two or three times the average width. In illustration of this is the following incident: One day while crossing a recent clearing in a New England forest I noticed an exceptionally large stump cut quite close to the ground. Its bark and graining, porosity, etc., showed it to be the remains of a giant tulip tree with 119 rings, indicating an unusual age for a forest tree of that species in that locality. But counting back thirty rings from the margin was one which was more than double the width of the others. This meant that in some manner in that year the tree had had access to more than its usual share of light, air currents and moisture, and it was easy to guess that 30 years before the lot had previously been cut over. Coming down the mountainside I met the son of the old man that originally owned the forest. "Jim," said I, "when was that lot cleared?" "Oh, a couple of years ago." "Anyone could see that," I said, "but when before then?" for, like almost all New England forests, it had been cut over several times. At first he could not recall, but suddenly he



Photograph by Underwood & Underwood  
HENRY FORD CHOPPING FIREWOOD

said "it was the year my father bought the farm and the first thing he did was to clear that lot." "But when was that?" "Thirty years ago." And thus came the proof that the old giant had written its biography correctly.

## ANNOUNCEMENT

The American Forestry Association has moved from 1214 Sixteenth Street to 914 Fourteenth Street, Washington, D. C., from which office all business will be transacted.

Members of the Association are invited to visit the new headquarters of their Association.



# LARCH IN MAINE THREATENED BY INSECT DEPREDAATION

By H. B. Peirson

CONSIDERABLE attention has been called to the browning of the larch or tamarack in eastern Maine. In many localities large stands of larch appeared as if a fire had swept through, whereas a few weeks previous they had been green. In places where the larch occurs in large stands, making up a high percentage of the forest, whole hill-sides and valleys looked brown.

The first thought was that the larch sawfly was again sweeping over the state. This insect destroyed practically all of the larch in the state in 1882 and has nearly made the larch tree extinct in some of the Eastern states. Within the last few years, however, large quantities of larch have again begun to seed in on old pastures. The larch is an extremely valuable tree, the wood being very durable, so that it is used for the upper knees of small vessels, telegraph poles, fence posts, and railroad ties, besides being used in cabinet work and for interior finishing.

Examination of the stands of larch have shown that the trees are being attacked by a comparatively new insect to this region. It is known as the "Larch Case Bearer" and is very common throughout Europe where it is a serious pest. It was first recorded in this country in 1886 where it had probably been brought on European Larch, a tree that is quite widely planted in the North-eastern United States. At this time it caused considerable injury to a thirty-year-old stand of larch in Northampton, Massachusetts. It has been known for a good many years at the Arnold Arboretum in Boston, and has also been observed in Albany, New York. At no time, however, was it found in sufficient numbers to cause any grave apprehension, as it apparently did not multiply rapidly. At the present time very little is known as to the life history of the insect and observations are now being carried on by the Maine Forestry Department in an effort to determine whether the insect

is likely to prove serious or not.

There is apparently but one generation of the insect a year. The delicate gray moths started to emerge from the small cigar-shaped cocoons about June twentieth. The moths, which are only about three-sixteenths of an inch in length, lay their eggs on the new needles and the young larvae hatching out immediately begin to tunnel or mine within the needle, causing it to turn yellow and then brown, starting from the tips. When very numerous, practically all of the needles on a tree may be injured and in many cases destroyed, as in the present outbreak. As soon as the mine is long enough to form a case, a portion of the needle is cut off and the larvae proceeds with this protection to another leaf. When attacking a needle the larvae first cuts a circular hole through which its head and later its body may extend for feeding purposes. The case, which at first is whitish, gradually becomes gray with age, and is lined by the larvae with silk upon the approach of cold weather, when the larva, carrying its case, retires to a sheltered place on the branches or beneath bark and lichens. It becomes active early in the spring and continues feeding. Owing to the fact that nearly all of the feeding is done within the leaf, it will probably prove a difficult insect to check. There is at present every indication that considerable damage may be done to the larch, for the insect is becoming extremely numerous.

Our native larch, known scientifically as *Larix laricina*, is called by a large number of common or local names. In Maine it is commonly referred to as Hackmatack or frequently as Juniper, but this name is very misleading as two real species of Juniper occur in this state. West of Vermont it is most frequently called Tamarack, so that both this name and larch are recognized as the proper names for the species.

## Big Buffalo Bull Goes to Uruguay

**B**ISO is unhappy!

He is to be deported, thrust from the land of his birth, torn from his wives and children and doomed to live in exile for the rest of his days.

Secretary of Agriculture Wallace has decreed that he must go; the Forest Service has arranged his transports and Basis is inconsolable.

Biso is the buffalo bull that for fifteen years has been the admiration of visitors to the Wichita National Forest and Game Refuge in Oklahoma. The city of Montevideo, Uruguay, has asked that its zoological garden be supplied with an American bison and the Forest Service men who have charge of the buffalo on the Wichita say that Basis will be an excellent representative of this typical North American species whose

once mighty herds roamed the great plains from Mexico to northern Canada.

In 1907 fifteen bison were "planted" in the Wichita National Forest and have since increased to over 150 head. This herd promises to maintain the type and stamina of the original bison, since the animals are kept at all times under natural conditions. They subsist entirely on wild grasses and live within so large an inclosure that they are under practically no restraint. So Basis has been well content and is reluctant to leave. Yet many of the younger buffalo bulls are casting envious glances at the old fellow. It would be very pleasant, they think, to doze idly beneath a palm tree and be served with fresh cut grasses or have their wrinkled noses patted by some dark haired senorita.

But Basis has his doubts.



# EDITORIAL

## A NOTABLE REPORT ON FOREST TAXATION

FOREST taxation is rated by many second to forest fire as a deterring hazard to the enterprise of growing timber. The present state of our tax laws relating to forests is indeed a sad commentary upon American progress during the past two and a half decades. Failure of our state legislatures to recognize that tax laws, as now generally drawn, tend to tax our remaining forests out of existence and to prevent private individuals from growing new forests, stands today as one of the foremost obstacles to the private practice of forestry in this country.

Because the subject is of such vital importance, *American Forestry* prints in this issue the report of the Committee on Forest Taxation of the National Tax Association, which was read by Fred R. Fairchild, Professor of Political Economy, Yale University, at the annual meeting of the Association in Minneapolis on September 19. The report was prepared by Professor Fairchild, Chairman of the Committee, after consultation with other members of the Committee. It unquestionably is one of the most important contributions to the cause of forest taxation in this country yet to appear and will be read with great interest and profit by all interested in the subjects of forestry, lumbering and taxation.

In the opening pages, the report reviews briefly some of the earlier efforts at forest tax reform and points out the reasons why so little progress has resulted from the movements. Out of the experience of the past and the progress of taxation in general, the Committee views forest taxation today as involving two distinct problems, one relating to young, growing forests and the other to virgin or mature forests. Under the plan proposed for growing forests, by which is meant immature trees, all forest growth, excepting that which had reached maturity under the criteria of the law, would be exempt from taxation.

The land on which the young forest is growing, however, would be assessed—no account being taken of any forest growth other than mature timber—and taxed annually on a parity with similar bare lands in the neighborhood. The tax upon the growing timber would come whenever any forest products are harvested, or in the event there is no cutting, when the timber reaches a growth which places it in the class of mature timber. All timber cut before maturity, excepting small amounts taken by the owner or tenant for his own use, would be subject to a yield tax at a rate corresponding to the business tax on other businesses. The Committee suggests a rate in the neighborhood of five per cent, the tax to be administered by state officials and distributed to the towns or counties.

But should there be no cutting prior to the time when the young forests reach the mature class, it becomes automatically taxable property under the law proposed for mature timber. For mature timber,

the Committee recommends the general property tax, based on principles that

(1) Mature timber should be taxed as nearly as possible on equal terms with other wealth and business,

(2) The individual income tax, where it exists, should apply to forest income the same as other incomes,

(3) Where there is a special business tax it should take the form of a yield tax in the case of forests,

(4) The property tax as applied to marketable mature forests should be the equivalent of an annual tax upon the land and trees, assessed in the same ratio to true value as prevails for other taxable property and at the same rates, and

(5) Where the mature forest is inaccessible and therefore not marketable until some time in the future, the property tax should take that fact into account.

"Taking everything into consideration," the report concludes, "your Committee is of the opinion that the only practicable solution of this problem is to seek to make the property tax as equitable and convenient as may be. In particular, every effort should be made to insure a fair assessment of forest property." That the Committee did not think it feasible to distinguish between marketable and unmarketable mature timber, we believe, was a wise conclusion. To attempt such a distinction would at once establish a danger line of controversy and abuse. The property tax applied to unmarketable tracts, if fairly done, will naturally meet the idea of deferred income by a lower stumpage valuation.

The Committee's plan does not fully meet all the difficult and entangling features of the forest tax situation. Such a plan would be too refined to work under present conditions of American taxation. In the recognition of that fact, the Committee rendered its greatest service. It has brought forth a plan which is sane, practicable and simple, and which at the same time strikes the great need in forest taxation, namely, assuring the owner of young growing forests a fair, definite and reasonable method of taxation.

Possibly the main criticism of the plan will be on the grounds that, involving as it does the income tax feature, it will not be applicable in a great majority of the states without first obtaining the necessary constitutional amendments. But as forest depletion advances and the public becomes more enlightened on and more insistent for forest legislation, that obstacle will constantly become of less and less moment. And with the way cleared, the Committee's plan fits in easily with the going scheme of taxation, is uniformly compulsory and is free of red tape and intricate features,



## THE RAILROADS AND THE NATIONAL FORESTS

**D**URING 1921 over five million people visited the National Forests. Year by year the number has been increasing. There is a reason. The National Forests of the west embrace a large proportion of the best remaining game and fishing grounds of the nation. Within their boundaries are some of the highest peaks, a majority of the glaciers and some of the highest waterfalls of the country. By the construction of roads and trails, the establishment of delightful camp sites on wooded mountain streams and the opening up of summer home areas, the United States Forest Service is making these attractions readily accessible.

The National Forests are the greatest pleasure grounds of the American people and to them the American people are coming more and more to seek that invigorating recreation which is now considered a necessity of modern life. And the public is not alone in coming to regard these National Forests as a great recreational asset to be seen, used and enjoyed. The great railroad systems of the country are slowly awakening to the fact that these great areas of wonderful forests and majestic mountains are growing feeders to their permanent prosperity.

Covering most of the important mountain ranges of the west, these Forests with their 156 million acres, contain scenic resources alone which make them an immense asset to the great transcontinental railroad systems of the United States. The newer National Forests of the northeast and the southern Appalachian range will in time become as great an asset to the railroads of the Atlantic seaboard.

Within the nineteen National Parks are the superlatively grand and stupendous effects of Nature, and

while they will always remain objectives for the traveler and the tourist, the National Forests—in no sense the rivals of the Parks—because of their greater number, wider extent, and accessibility, will always attract a much larger number of visitors. From a recreation standpoint the National Forests should supplement the National Parks, each attracting visitors to the other, each helping the American to a fuller appreciation of what life in the outdoors can mean and what America has to offer in scenic beauty and grandeur.

Most of the transcontinental lines cross or touch many of the National Forests. Some day the railroad literature, voluminous and for the most part well planned and most attractive, will play up the beauty spots, the free camp grounds, the summer home sites, the mountain peaks and other summer delights of the National Forests, for the good reason that it will be good business to do this. Good roads, automobiles and an increasing number of camp grounds, both municipal and forest, make this necessary on the part of the railroads.

Already several of the Pacific Coast lines are beginning to do this. One road has issued a special hunting, camping and fishing guide for a group of National Forests in Oregon. An edition of ten thousand copies was published in the spring of 1922; this was soon exhausted, and a second edition of ten thousands copies was issued within three months, which shows that the public wants to know more about recreational delights of the National Forests, from first hand contact. General passenger agents and publicity experts of the railroads would do well to consider the National Forests and what they offer.

## THE DAWN OF THE APPALACHIANS

**A** MOTOR road was recently completed to the top of Mount Mitchell, the highest point in eastern America. This road opened up to tourists an alpine climate, a vegetation strongly suggestive of Canada, a magnificent distant view over chain after chain of hazy mountains—and alas, as desolate a waste of destroyed forest as can be found anywhere in the East. Slopes, on which there remain only the gray wrecks of dense spruce and fir forest, disfigure the nearer view from the peak, a veritable blot on the escutcheon. Tentative results of studies now being conducted by the Appalachian Forest Experiment Station indicate that the only effective way to restore these forests is by planting—a slow and time-consuming process.\*

Unless conservative methods are soon introduced, what is true of Mount Mitchell will be true of mile after mile of spruce covered ridges at high altitudes throughout the Southern Appalachians; and these, as the sources of its waterpower and the crown of its mountain beauty, are figuratively as well as literally, among the highest assets of the South.

In many respects—potential waterpower, scenery, recreational facilities, timber producing capacity, and

incidental values—the Southern Appalachians may without too much exaggeration, be compared with Switzerland or Italy. The mountain resources stand in much the same relation to the industrial prosperity, but in the Appalachians the development of these resources still lies largely in the future. As in the older countries, forestry will be an underlying essential of all these lines of development. To reclothe cut-over, burned, and unsightly slopes with a cover of thrifty timber is a prerequisite not only of continuous timber production but also of scenic improvement, waterpower conservation, and in fact all the uses to which forest lands are put.

One of the greatest industries of the Southern Appalachians—a steadily growing one—is the tourist industry. As rapidly as the by-ways and secluded places of the mountains are made accessible to tourist traffic, examples of the need of forestry are increasing both in number and variety. Another first line industry is lumber production. A third great group is comprised of the industries which will develop around waterpower. A three-fold requirement is hereby placed upon forestry. The duty and the opportunity of meeting this demand rest with the public. The federal government, through



the Forest Service, and the States, through their forestry departments, are trying as best they can to meet the situation, but the available resources are only a drop in the bucket compared with what they must be to preserve the forests, with their three-fold values, and to start the bare and denuded slopes on the road to recovery.

To keep pace with the requirements which are being placed upon it, the Southern Appalachian region must

undergo a deep-seated development along diverse and important lines. Unless all signs fail, this many-sided development is to be a thing of the near future. Underlying it and fundamental to the success of the whole scheme is the practice of forestry. Attempting to meet impending opportunities for permanent growth and development, without recognition of this fact, will be as expensive and shortsighted as trying to build a great dam on a leaky foundation.

## *Important Announcement*

The next issue of AMERICAN FORESTRY MAGAZINE (December, 1922) will be called the "Lake States Number." Among others it will include the following beautifully illustrated articles:

**A PICTURE THAT WALKED** by Harold Titus

(Author of "Timber"—the most widely read novel on conservation)

**HENRY FORD'S FOREST** by Ovid M. Butler

(Forester of the American Forestry Association)

**MICHIGAN'S FIGHT FOR FORESTS** by P. S. Lovejoy

(Nationally known author of forest and woodland articles)

**THE ROAD TO WISCONSIN'S GREATER OUTDOORS**

by Henry C. Campbell

(Assistant Editor of the Milwaukee Journal)

**THE FOREST WHERE THE MISSISSIPPI BEGINS**

by D. Lange

(Author of "The Lure of the Mississippi")

**IMPORTING REINDEER TO MICHIGAN** by Albert Stoll

(Popular writer and Secretary Michigan Conservation Commission)

**A BIT OF OLD WISCONSIN** by Judge Asa K. Owen

(President Northern Lakes Park Association)

**THE FIRE CALL OF THE NORTH WOODS** by William T. Cox

(State Forester of Minnesota)

Governors of Michigan, Wisconsin and Minnesota in personal statements on forestry in their States

Several Other Splendid Articles

**DON'T MISS THIS ISSUE.** Send us a list of your friends to whom you would like a copy sent. Extra copies 40c postpaid. Subscribing membership in the American Forestry Association, including Magazine, \$4.00 a year.

## **American Forestry**

**WASHINGTON, D. C.**

(Largest Circulation and Most Widely Quoted Magazine on Forestry, Wood Uses, Lumber and Trees in the World)



# FERNOW HALL

By Ralph S. Hosmer

Professor of Forestry, Cornell University

TO everyone interested in forestry in America the honor recently conferred on Dr. Bernhard E. Fernow by the trustees of Cornell University will seem a fitting recognition of real and substantial accomplishment.

On the afternoon of October 5, 1922, there was unveiled at Ithaca, New York, over the entrance of the Forestry Building on the Cornell University campus, a tablet bearing the words "FERNOW HALL." The naming in Dr. Fernow's honor of the building where is taught the subject that he organized for instruction in this country was authorized by the trustees of Cornell University on June 20, 1922. The unveiling of the tablet on October 5 was marked by addresses by Dr. Livingston Farrand, president of Cornell University, Dean A. R. Mann, of the New York State College of Agriculture, and Professor Ralph S. Hosmer, head of the Department of Forestry.

By an interesting coincidence two of Dr. Fernow's sons are now connected with Cornell, one as an instructor in the College of Engineering, Mr. B. E. Fernow, Jr.; the other as a graduate student in Plant Pathology.



CORNELL HONORS DISTINGUISHED FORESTER  
Entrance to the Forestry Building at Cornell University dedicated to Dr. B. E. Fernow.

To the latter, Mr. Karl H. Fernow, fell the pleasant duty of pulling the cord that raised the flag covering the tablet bearing his father's name.

The building hereafter to be called FERNOW HALL was erected through a special appropriation made by the legislature of the State of New York in 1911. It was dedicated in May, 1914, and since then has been the home of the Department of Forestry of the New York State College of Agriculture at Cornell University.

It seems peculiarly appropriate that Cornell University should thus honor Dr. Fernow, for it was at this institution that there was established under his direction, in 1898, the first school of forestry on the American continent, the old New York State College of Forestry at Cornell University. Although suspended in 1903 as the result of an unfortunate controversy that arose in connection with the college forest in the Adirondacks, the old New York State College of Forestry has a notable record. There was never the least criticism of the instruction given at the college. On the contrary, the best evidence of the value of the work that Dr. Fernow did in organizing a professional forestry curriculum is to be found in the fact that the general program of study that he established at Cornell has become the basis for the standardized curriculum of instruction in forestry that is now followed by all the leading forest schools in the United States.

In this connection it may be interesting to note that of the seventeen men who were graduated from the old New York State College of Forestry and received from Cornell University the degree of Forest Engineer, the fourteen now living are all actively engaged in the practice of forestry as a profession. A number of these men bear names that are well known both in the United States and Canada.

While at Cornell Dr. Fernow made another contribution to forestry in America that is of far-reaching importance, the founding of a technical forestry journal, the "*Forestry Quarterly*." In 1917 this magazine was merged with the Proceedings of the Society of American Foresters and given the name "*Journal of Forestry*." Dr. Fernow still remains its editor-in-chief. One of Dr. Fernow's most important books, "*The Economics of Forestry*," also appeared during the years he was teaching at Cornell. It is one of the most valuable books in American forestry literature and is as vital today as when it came from the press twenty years ago. Other of Dr. Fernow's books, outside of numerous government publications, are his *History of Forestry*, 1907, (3rd revised edition, 1913), and his *Care of Trees*, 1910.

But the achievements of Dr. Fernow do not rest alone on what he accomplished while at Cornell. His con-



tributions to the cause of forestry in America began much earlier than that. From 1886 to 1898 Dr. Fernow was chief of the Division of Forestry of the United States Department of Agriculture, the branch of the government that in later years developed into the Forest Service.

Dr. Fernow was the first technically trained forester to be employed by the government. Indeed, when he took that position he was literally the only man in the United States whose training entitled him to be called a professional forester. In one of his books Dr. Fernow says that the term forestry was then not even to be found in the dictionaries. He was indeed a pioneer in what in this country was a new field.

For twelve years Dr. Fernow labored hard, against many odds, to bring to the people of the United States a realization of what forestry is and what forestry practice seeks to accomplish. Hampered by meager appropriations and assisted by only a small staff, he nevertheless did a very great deal to lay surely and well the foundation of public sentiment in favor of forestry that at least in part made possible the rapid development that followed in later years.

Perhaps the most noteworthy event with which Dr. Fernow was connected during this period was the passage by Congress in 1891 of the law authorizing the President of the United States to set apart as forest reserves portions of the Public Domain. This is the fundamental law on which rest the National Forests of today. But during that twelve-year period there was hardly a project related to the development of forestry in which Dr. Fernow did not have a hand.

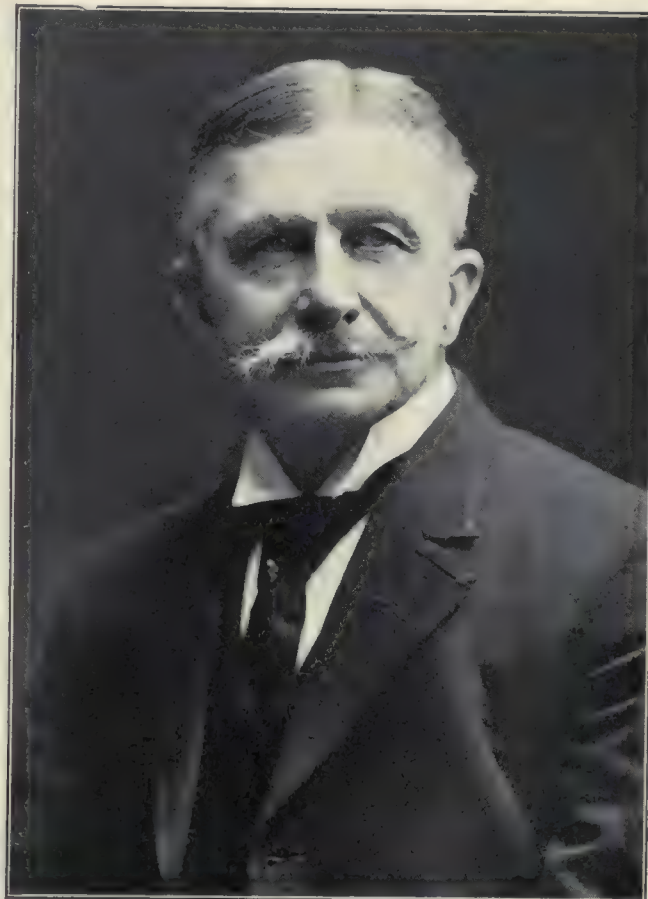
The readers of this magazine will particularly like to recall that Dr. Fernow was one of the founders of the American Forestry Association, at meetings held in Cincinnati and at Montreal in 1882, and that for fifteen years he acted as secretary of the Association and chairman of its Executive Committee. From 1885 to 1898 he was editor of the Proceedings of the American Forestry Association and of its journal, *The Forester*.

Dr. Fernow's ability as a forceful speaker and writer makes the list of his contributions to popular education in forestry a long one. It is out of place here to try to enumerate them. Enough to say that Dr. Fernow played a leading role in bringing to the attention of the people of this country the fact that forestry is a wholly practical subject and that it involved problems that have a vital bearing on our wellbeing as a nation.

In 1907 Dr. Fernow again broke new ground in establishing the first forest school in the Dominion of Canada. From that year until his retirement on account of age in 1919, he was Dean of the Faculty of Forestry of the University of Toronto, where he built up a forest school of high grade. Dr. Fernow has further served the Dominion by membership on the Canadian Commission of Conservation, where he has done active and valuable work.

At the time of Dr. Fernow's retirement from the University of Toronto, in 1919, as Professor of Forestry,

Emeritus, *American Forestry* published a comprehensive article by Prof. Filibert Roth, dealing with his life work. It may be found in the issue of April, 1920. It seems unnecessary here to add further details. But one who has known something of Dr. Fernow's home life cannot refrain from mentioning in passing that it was a never-to-be-forgotten experience to be bidden as a guest to enter that delightful circle.



DR. B. E. FERNOW

Identified with forestry in America since its inception and the founder of the first forestry school on the American continent.

It had been greatly hoped that Dr. Fernow could be present in Ithaca at the unveiling of the tablet bearing his name, but continued ill health made that impossible. Dr. and Mrs. Fernow are now residing at 16 Admiral Road, Toronto, Ontario, Canada.

The action of the trustees of Cornell University in giving Dr. Fernow's name to one of the important buildings of the university was taken in recognition of Dr. Fernow's many and varied services to the cause of forestry in America. It is an honor that is merited by sterling achievement. To all American foresters it is a cause of rejoicing that this honor comes while Dr. Fernow himself can have the satisfaction of knowing that the work of his life is appreciated.

Dr. Fernow, in writing to Prof. Ralph Hosmer, of Cornell, in acknowledgement of the dedication, said:

"Once more allow me to express my great regret at



not being able to attend in person the ceremony of the dedication of your building and to return my grateful acknowledgements for the honor, to you and those instrumental in having my name connected with the stately building devoted to the teaching of forestry. This recognition of my services is particularly grateful in that it comes from the institution where my work as teacher began and which has always commanded my loyal interest.

"Had I been present I would have pointed out that my desserts are more than duly recognized by the handsome compliment of naming the building after me, and that it was only the accident of my being the first in the field and my persistence therein that gave me the proud position in which my friends have insisted on placing me.

"I would also have elaborated the fact that a teacher lives in his students and that the honor heaped on the former is earned by the doings of the latter and would have enumerated the graduates of the earlier years now occupying prominent positions. My pride is centered in them.

"To your students I would have recommended the adoption of my motto, borrowed from Horace, *Carpe diem*—do the duty of the day—with confidence in the due development of the future.

"The future for forestry seems full of promise and I would have congratulated all who are working in that profession."

## Farm Forestry at the Berry Schools

**A**NNOUNCEMENT has been made by the Principal of Berry Schools at Mount Berry, Georgia, that the institution will offer a course in Farm Forestry. To all foresters and lovers of forests this comes as an important and interesting announcement, largely because of the character, reputation and plan of Berry Schools. Situated in the foot hills of Georgia, this School has for twenty years served in a unique way, the boys and girls of our Southern Piedmont Region. Early in 1900 Miss Berry, a young Southern woman, saw the need of an industrial and country life school, where the unfortunate but proud and very promising sons and daughters of our Southern highlanders could secure an education fitting them for constructive life and citizenship. The birthplace of Berry Schools was a cabin in a grove near Martha Berry's home. In 1902 a small school house was built on property given her by her father, and the Martha Berry Boys' Industrial School began its term of service. Today there are three schools; one serving the boys, another for the girls and another which is the Mountain Farm School, where foundation training is given to those boys who have never had a chance. The campus, farms and wood lots cover approximately six thousand acres and there are nearly ninety buildings. A remarkable growth from a small log cabin on one's home estate.

To these schools come young people from all over our rural and mountain South, each seeking a knowledge of life and character. From these schools back to their home communities, go young men and women who have learned how to live and be useful. With the ideal of service foremost, they return to their homes to give the best they have that others might live.

Each student is required to work and thereby earn a portion of his expenses; others by working earn all of their fees. This work takes them into the farm, the wood shop, in the kitchen and on construction jobs. Now some will find employment in the woodlots and



THIS TREE ON THE BERRY SCHOOL CAMPUS HOLDS A TABLET ON WHICH IS WRITTEN JOYCE KILMER'S EXQUISITE POEM ENTITLED "TREES."

learn by doing how best to establish and perpetuate such lands. On the campus everything has been done to help the students understand the beauty of trees and to love them for their great lesson of life. This work has been carried on and supported financially entirely through the efforts of Miss Berry, who is untiring in the struggle to raise money so that some might have the advantage which has been denied many. Unfortunately, funds are sometimes a little slow in coming, and a great many must be refused entrance to these remarkable schools.

Miss Berry is to be congratulated on this last move towards helping our people to a better understanding of the value and use of our forest lands.



# FOREST PROBLEMS OF GEORGIA'S HARDWOOD REGION

By E. H. Frothingham

Acting Director, Appalachian Forest Experiment Station\*

**B**ECAUSE of the remarkable extent and value of the original pine forests and their spectacular decline, forestry in Georgia has quite properly become associated very largely with pine and turpentine. Georgia pine lands undoubtedly command first attention; but no forest program for Georgia can afford to neglect the great resources which the State possesses in its millions of acres primarily adapted for the growing of hardwood forests.

Hardwoods are important elements in most of Georgia's forest regions, with the exception of portions of the great pine land areas in the southern part of the State. They are an item of value in the river swamp forests of the Coastal Plain, and play a part in the farm woodlands of the Piedmont Plateau. The true home of Georgia hardwood forestry, however, is in the mountain region, occupying about the northern one-tenth of the State.

This region is a notable part of Georgia. It is unexcelled in the State for scenic beauty, climatic attrac-

tiveness and recreational possibilities. It is unique in the value of its potential and applied waterpower and the richness and variety of its forest vegetation which stands at the source of this power. Its highest mountains bear the southern extremity of the spruce forest which follows down the Southern Appalachian Mountains from Canada. The white pine and hemlock, sugar maple, beech, and birch of the northern forests meet and mingle in its coves and slopes with a wealth of oaks, hickories, and southern hardwoods such as yellow poplar, cucumber and the gums. The upland pines—pitch, shortleaf and Jersey scrub—still further increase the variety of mixture and the number of forest types with which forestry in this region must deal. The great number of commercial species thus brought together present a complicated series of problems as to both utilization and silviculture. In the future forest management of the region, the harvesting of the maximum values in quality and quantity from these lands will demand an intimate knowledge of the life habits,



THE PRESENT FORESTS ARE IRREGULAR AND POORLY STOCKED, AND ONLY PRODUCE A FRACTION OF WHAT THEY MIGHT IF THEY WERE PROPERLY CARED FOR.

\*Read before the Georgia Forestry Association at Macon, Georgia, June 7, 1922.



growth, and requirements of the different kinds, and the relative value of their products.

Rich as these forests are in valuable species, they have been left in bad condition as a result of lumbering and recurrent fires. Very few remnants of the original forest remain. Over large areas the forest has been successively culled of its better species, and the poorer species left behind have often closed their crowns together and shut out the light needed for successful reproduction. Stands which, from a distance, have the appearance of luxuriant virgin forest may be found to consist chiefly of more or less defective trees of the less valuable species, with here and there a crippled and unmerchantable representative of a better kind. Of late years, with the increase in value of lumber and other wood products, cuttings have been heavier, amounting, in prosperous seasons, practically to clean cutting. Provisions for the reproduction of valuable species have been generally lacking and the way has been clear for the development of a second growth of less desirable species. Forest fires have burned repeatedly over large areas, damaging timber and second-growth, implanting seeds of decay and impairing the fertility of the forest soil.

We are at present at a low ebb in the history of

our forests. The original stands are practically gone, their place is occupied very largely by decrepit culled forest, burned-over slashings, and inferior second-growth, and fires are still frequent and destructive. Before we can think of practicing intensive silviculture or management in the hardwoods a transitional or introductory stage of forestry must be traversed. The problems of this introductory stage are mainly economic, legislative and educational. Colonel Greeley, in his address before the Third Southern Forestry Congress at Atlanta last year, pointed out what these fundamental preliminary steps must be. In their larger features they are much the same for all forest regions. They consist of measures to ensure fire protection, equitable tax laws, and other means to promote the holding and improvement of forest lands for future yields, and they also include simple and inexpensive silvicultural processes in lumbering, aimed to establish the beginnings of commercially useful stands of second-growth. These are the much discussed "minimum requirements," now the subject of study by the Forest Service throughout the country. In the southern Appalachian hardwood region, of which the mountain hardwood lands of Georgia are a part, these simple "first aid" measures consist only of such things as the ample



A FAR LOOK OVER THE SOUTHERN APPALACHIAN FORESTS. THE SCENERY IN THE MOUNTAINOUS SECTION OF GEORGIA IS UNEXCELLED, AND THE REGION IS UNIQUE IN THE VALUE OF ITS POTENTIAL AND APPLIED WATERPOWER AND THE RICHNESS AND VARIETY OF FOREST WHICH GUARDS THE SOURCE OF THIS POWER.





THESE FORESTS WILL NOT ONLY GROW TIMBER, BUT THEY ARE ALLURING PLAYGROUNDS FOR THE EVER-INCREASING POPULATION OF THE EASTERN SEABOARD. THOUSANDS OF PEOPLE POURED INTO THE NEWLY ESTABLISHED NATIONAL FOREST REGION DURING VACATION TIME OF THE SUMMER JUST PAST.

safeguarding of cut-over areas against fire and grazing, coupled with the leaving, in logging operations, of a few seed trees and the elimination of at least a part of the defective trees and inferior species which are sometimes left in considerable numbers on lands from which the cream of the timber has been removed.

These measures, if effectively carried out, will undoubtedly yield good results on the lands which still remain to be logged, but the restoration of the badly depleted hardwood stands is another matter. Only time and careful treatment in the preservation of all available seed supplies of the better species, and the provision of favorable light conditions for the best elements of the reproduction, will avail to replace the crippled and burned second-growth with an active, healthy, growing stand. The proportion of weed-trees and low-grade products must be diminished, in such ways as become available, for the benefit of the value-producing species. Gradually, the forest will reassert itself, if protected, and under proper guidance a new forest of superior quality will ultimately develop.

Assurance of healthy second-growth of commercial value is the foundation of the second step in forestry

in the mountain hardwoods. This step will consist in the organization of the forest as a factory for turning out the greatest quantity of the most useful forest products. It will provide for a perpetual annual or periodic yield from unit areas, such as individual watersheds or groups of watersheds. To carry out such a program successfully, there can be no failures due to ignorance of the behavior of the species under management. The problems involved in this second stage of hardwood forestry in Georgia are accordingly highly technical. They involve studies of the life histories of the many different species which make up the stand—their reproductive capacities, soil requirements, rate of growth, toleration of shade, and behavior in competition with trees of the same or other species in the forest. Economic factors are introduced, as in determining the period of rotation needed to produce specified products, and the times at which thinnings can profitably be made for the benefit of the forest. Such studies are indispensable to the placing of the proper trees on the proper soils, so that each acre can produce its maximum.



To summarize, the first step in forestry in Georgia's mountain hardwoods is largely economic and legislative, and its purpose is to give us a growing stock to work with. The second step is the regulation of the yield of this growing stock in unit areas, coupled with more intensive silviculture than can be practiced under present limitations. The second step will follow hard upon the first—in fact, on our National Forests, of which Georgia claims a share in her mountain region, we are already entering upon the stage of forest regulation, and are beginning at the Appalachian Forest Experiment Station, the studies of the reproduction and the

phases, the opportunity thus offered, and analyses are being made of the results of some of the early endeavors. In addition, however, the program of the Station for the current year carries a number of projects dealing with the management of the mountain hardwood forests. It is significant that with but one exception these projects deal with the two subjects of hardwood reproduction following cutting, and forest protection. These subjects are related properly to the introductory phase of forestry, and reflect the need for immediate information upon the preliminaries of forest practice. This, however, is in the nature of preparatory



YELLOW POPLAR IS EAGERLY SOUGHT BY THE LUMBER INDUSTRY. IT SHOULD NOT BE EXTERMINATED FROM THE FOREST BY CONSTANTLY CULLING IT OUT FROM AMONG OTHER SPECIES.

growth of the forest in relation to logging which must underlie a sound and successful program of timber raising.

The Appalachian Forest Experiment Station, which was established at Asheville, North Carolina, last July, will work primarily on the problems which are arising in connection with the mountain and Piedmont forests. Asheville, situated in the heart of the Southern Appalachian hardwood region, less than 60 miles from the Georgia line, has been called the "cradle of American forestry," for it was there that some of the earliest work in forestry on this continent was done. The work at the station has naturally followed, in its opening

work, and as rapidly as it is cleared away the Station will concern itself with the maze of technical problems which relate to the intensive phase of forestry which is inevitably approaching and may not be so very far in the future.

Georgia is now, it is to be hoped, at the threshold of a forestry career. Before proceeding further it would be well to consider the relative timeliness of the two classes of problems which have been touched upon in this paper, and the emphasis which each should receive at the present stage in forest work in Georgia. There is just a bare chance that a forestry program just hatched might suddenly discover itself, to its de-



cided embarrassment, to be blessed with a whole corn appetite and a soft mash digestion or, on the other hand, to have inherited a controlling mental complex in favor of always remaining a mere chick. There is a normal course of development which a rightly initiated forest program will necessarily follow, because it will have inherited a proper sense of proportion. A program should be properly balanced to take full account of future needs, but it must not start off too far in advance of the times to keep its feet squarely under it. There must be adequate provision for technical studies from the outset; that is essential. But what must be stressed at the beginning are the problems which surround the first stage in forestry, which must be solved before research work in forestry can be assured of its ground.

Intensive silviculture must grow up with the second-growth. The pervading influence of our late lamented virgin forests, the present deep-seated and in-grown methods of large-scale exploitation, the prevailing conditions of demand and supply of wood products and, above all, the great forest land areas that demand attention, do not form a combination favorable to intensive practice. There is something much more immediately important for the as yet totally uncared for portions of Georgia's hardwood land, and that is to get results, no matter how modest, on all this land. No matter how much we may resent the present competitive logging methods with their disregard for anything except immediate income, we are forced to take them into account. If they are to be modified in the near future we may be sure it will not be by an abrupt transition to intensive forest practice.

The second-growth period of forestry is at hand all over the country, following the lead of New England. The obvious thing to do is to establish second-growth on a large scale. We shall get a proportion of tree weeds, no doubt; and the new forest will be very far from perfect. It will be for the silviculture of the future to make it an efficient and smoothly running means of continuous supply. What we are after is a new forest in which forestry of our own devising and adapted to the needs of each forest type and each local community with its peculiar industrial demands, may be practiced. The public requirements on forest lands, which are now being formulated, will give us definite means for securing this workable new forest of second-growth.

The conditions established by the minimum requirements may be taken as the balanced judgment of nearly a generation of foresters, or at least such as have written records of their findings. The requirements fixed upon as the minimum have come into being after a deliberate culling from a large group of possible methods, some of them more desirable but too advanced for present practice, so that the regulations established are not empirical in their origin. If we are ready to accept the premise that to bring our wild lands into some producing condition is but a preliminary step in more intensive silviculture practice, we have made a great stride. New methods can then be tried as they should be, on experimental areas by specially equipped inves-

tigators, and the general application of theories to large areas will cease, pending proof by actual trial. With a knowledge of minimum requirements we shall have something definite to work with, which we know will, if effectively carried out, produce the broad results that are our immediate need.

## A Tribute to Loyal Service

Roy H. Goodell, a Forest officer employed by the Forest Service on the Washington Forest, was killed on the evening of July 6, 1922, by a large boulder while he was in the act of putting out a fire with a shovel and by the use of soil. Shortly after the fatality Mr. L. H. Pederson, a welfare worker at the City of Seattle power camp, learned of the occurrence, inspected the conditions surrounding the death, and on account of the deep impression that he received at that time wrote the following memoir which is a grand tribute to the loyal service rendered by a humble Forest officer.

### "With Shovel in Hand."

Killed—with shovel in hand—  
A Forest Officer.

Worn with sleepless nights and days of care,  
Just back from the towering peak,  
Where he searched over canyon and glen for a  
"smolder,"

Down a thousand steps, o'er the dizzy cliff,  
To trample it out with scorched feet—  
Then up again to challenge the eagle  
In searching the smoky haze.

Where the cooling shade and tumbling brook  
Refreshed laden beast and man;  
Where the songsters of heaven and their furry friends  
Played fearlessly hide and seek;  
Where the boulders were softened with lichens and moss  
And shielded the blossom and fern;  
Where the Gardener Divine for age upon age  
Had labored and planted and grown,  
A blast as from hell in a moment of time,  
Has spewed its flame-scarred wreck,  
There he worked, there he fought,  
There the boulder shot like the lightning bolt  
And struck him down, with shovel in hand.

Like him would I go.  
Whether I work with shovel or ax,  
With square, with lathe, or with hoe,  
May my body be soiled with the grime of its toil,  
And my hands be scarred with its flame;  
Though my face be so marred that they know me not,  
And the conflict my body has torn,  
May stranger and friend say of me as of him—  
"He fell with his shovel in hand."

—L. H. Pederson (Parson Pete).

May we all redeem our every responsibility that the Service may receive such unsolicited praise from the public whom we serve.



# GARDEN LORE

BY CLIFFORD ALBION TINKER

ENGLISH landscape architecture, so natural in its conception, so generally perfect in its execution, is a delightful adjunct to the semi-formal British civic center; a glorifying feature of the vast and ancient baronial estates; and a harmonious addition to the rustic countryside. Framed in by skilfully arranged trees and shrubs, or sweeping away in undulating richness, are the beguiling lawns, forever inviting a romp, or suggesting a Maypole and happy, beribboned children.

Each lawn has its own peculiar beauty; but the grass of all is the greenest, the clover is the most deliciously crisp, and the wayward, dotting little blooms are the sweetest of any in the world. The only rival of this verdant loveliness is found in the green swards of the fog-bedewed New England Coast.

There is a climatic similitude which is the heritage of Old and New England alike, for Dame Nature, peculiarly generous, by her handmaiden, the Gulf Stream, dispenses with a grand and misty flourish her loving favors equally on both the Briton and his Yankee cousin. This similarity of climate finds its most impressive expression in a similarity of verdure which is most strongly marked among the deciduous shrubs and trees, giving New England and the British Isles their characteristic

and beautiful natural landscapes, and the indigenous herbaceous annuals and perennials so dear to the New Englander have been at home in England for centuries.

While the English landscape architect has an abundance of deciduous trees at his disposal, which he uses with telling effect, he finds himself more or less handicapped by lack of native conifers. The Scots' pine and the juniper, together with the yew, which last is possibly not a conifer at all, make up the list of natives, the list, however, being somewhat expanded by importation of conifers from other lands.

In the language of the botanist, the yew is a dioecious tree or one having the peculiarity of bearing male and female blossoms on separate trees, although sometimes a yew is found which has one or several branches whose flowers are of the sex opposite to those which cover the greater part of the tree, while added to this are other peculiarities which make yew trees one of the most characteristic of all the trees of Britain.

The yew attains great size and unconscionable age; one in the church-yard of Fortingal, Perthshire, is over two thousand five hundred years old, while another in Hedsor, Buclas, measures twenty-seven feet around and



A COTTAGE HOME, SET LIKE A JEWEL IN A LOVELY GARDEN

The English landscape architect by accepting nature as his guide has made a bower of his "tight little isle" and given to the world the most perfect example of intimate little gardens for the cottager.





*Photograph by Judge, London*

#### A VISTA AT HAMPTON COURT

Hampton Court Palace is surrounded by entrancing gardens, embellished with art objects of priceless value, but the glory of the historic old place is its oak trees, ancient and towering, and expressive of England, old and new. Under the springing arch of this noble old oak is glimpsed a vista of that part of Hampton Court designed by Sir Christopher Wren.

is said to be three thousand two hundred and fifty years of age; still another, not in England, however, but sometimes called "the oldest living thing on earth," is the giant yew at Chapultepec, Mexico, measuring 120 feet around the bole, and boasting the hoary age of six thousand two hundred and seventy years!

The yew is far from graceful in proportions, but it is a robust, strong-limbed tree with a devil-may-care angle to every branch, an air of obvious independence, and gives the impression of strength and endurance. Although not poisonous, the yew is credited by many with that dangerous and disagreeable quality, and thus its name in the form of *toxicum* is used to designate all poisons.

This peculiar tree is famous in song and story, but is more at home in legend and history; for, indeed, its tough old branches furnished the remarkable long-bows of the valiant English archers and cross-bowmen who fought with grim success at Agincourt, Crecy, Orleans, Palestine, and on many other foreign fields and domestic battle grounds. History without the stout yew-bow would lose much of its engaging romance

as far as England is concerned, and the British legends would be a very different article had the yew tree not found Britain a friendly soil.

The Sherwood Forest yews provided Robin Hood and his rollicking band of woodsmen with their thrice-dreaded long-bows, and when the gallant outlaw leader was about to die he shot an arrow from a window of Kirkley Hall with the injunction to his faithful lieutenant, Little John, "Bury me where the arrow falls." A swift flight and the shaft fell at the foot of a yew in the churchyard, and there, as he had entreated, the romantic hero of the "Forest Tales" lies buried.

As the yew grows, it is continually sending up shoots from the lower part of its bole, and as these shoots enlarge they take an upright position, finally adhering and coalescing with the older growth, until the tree presents the appearance of having several trunks more or less grown together, and one, standing before a giant yew, may readily see whence came the popular idea that the yew trunk served medieval builders as a model for the clustered columns of their cathedral aisles.



*Photograph by Judge, London*

#### TREES ARE USED BY THE ENGLISH LANDSCAPE ARCHITECT WITH TELLING EFFECT

Yew, oak and plane are combined in vista effects around about old Canterbury, and close to the ivy-covered walls are those old-fashioned flowers of age-long appeal, which shed a brilliancy all their own in nook and corner, imparting that delightful touch so familiar in English landscape work.



Religious significance has always attached to the sombre yew, it is a tree for the burial ground and was planted therein as far back as Egypt of the Ptolemies, from whence its funeral use spread to Greece and Rome. Yew was carried at funeral processions, was the wood used in the cinerary fires, and was

placed in the graves before the body was committed; this last ceremonial rite still exists in the Egyptian custom of spreading basil over tombs, in the Masonic service where acacia is cast into a grave, and in the almost uni-



*Photograph by Judge, London*

THE VINES OF OLD ENGLAND ARE PROFUSE AND GORGEOUS IN THEIR BRILLIANCY

The little countryside chapels and churches seem to grow out of the ground, so wonderfully have the landscape designers handled the mass of verdure indigenous to the British Isles.

versal usage of lining graves with green boughs to relieve the harshness and chill of the fresh dug earth.

The yew of the present-day landscape architect is an ornamental variety, the Irish yew, which differs from the old type and grows more erect like the Lombardy poplar, with a slight bole and scattering leaves, instead

of two rows of leaves on each bough and a built-up bole like the English yew. The Irish tree is used for new planting, but when a rugged, striking specimen is needed, the architect hunts out a reddish, thin-barked old bow-



*Photograph by Judge, London*

REMINISCENT OF THE BOLD AND GALLANT DAYS OF RUPERT OF HENTZAU

But no matter how rugged the castle, how bold and bleak its sides, or how forbidding its moat, it cannot express more strength and dignity than the famous oaks of England. Around Bodiam Castle, here pictured, are huge oak trees centuries old, which frame the famous structure from every angle of approach.



yew and plants something worth while. While the yew is supreme among the Briton's evergreens, the king of deciduous trees is the English oak, a proud and sturdy tree, supposed to typify, by its time and storm-weathering qualities, the very essence of British character. It does. Its solitary and individualistic tendencies, often living alone, here and there, in the fields and forests, with its mates at a distance; with dignified, symmetrical outlines and with utter disregard of storm or circumstance. In these matters it surely portrays, graphically, the true Englishman. "Heart of Oak"—the song—the story—that is England. Not that England is alone in this; for we have our oak trees, too. And they are every whit

the conjuring names of the mighty sea-kings of long ago; Raleigh, Hawkes, Drake, Nelson, and hundreds of lesser lights have inspired many a volume, and the strength of glorious and heroic tradition therewith associated has as strong an appeal today as ever—the battered and sunken hulks at the moles of Zeebrugge and Ostend gives abundant proof.

Universally the oak is a symbol of strength, for Jove called it his own; the tribes of the North dedicated it to Thor, and early and primitive peoples worshipped it as a sanctified expression of diety. We can hardly wonder at this worship when it is considered what importance the oak assumed in the economic affairs of the ancients;



A VILLAGE STREET IN OLD ENGLAND

Such architecture, so natural in its conception, so generally perfect in its execution, is a delightful adjunct to the semi-formal British civic center. One can almost see the lovely color scheme here—the brilliance of the hardy annual flowers against the soft neutral tones of the building groups and background.

as sturdy, every whit as symmetrical, every whit as symbolic of national character as their English brethren; they only lack appropriate recognition; and more attention at the hands of artists and authors will place the American oak where it belongs, at the head of the list of America's deciduous trees.

The English oak, even more than the yew, is part and parcel of the romantic history of the Island Empire, and has been the theme of as much grandeloquent speech and laudatory composition as any other one thing produced in Great Britain. The oaken hulls of the ceaseless fleets of merchantmen, the oak-timbered line-of-battle ships, the backbone of British sea power of earlier days, recalls

furnishing the people with dwellings, tools, arms, ships, fuel, and food.

The Classics are filled with references to the oak; the prow of the Argo was fashioned from a speaking oak of Dordona, and it retained the power of speech even when at sea, directing the Argonauts and telling Jason the need of purging himself of the blood of the murdered Absyrtus. Erysichthon was condemned to lasting hunger by Ceres for cutting down an oak in her garden and killing the nymph who lived in its giant trunk; and because of the regal strength and appearance of the oak it was singled out by Jupiter when he cast his thunderbolts of displeasure at the human race, originating the



fiction that oaks are more often struck by lightning than other trees.

The Bible and many Hebraic and Christian legends give the oak a prominent place in the chronicles and early history of the Jews and the followers of the Nazarene. It was under the shade of an oak that Abraham met the angels; an oak

covered the suicidal body of Saul and his dead sons; Jacob used a friendly oak as the hiding place of Shechem's idols, and David's rebellious son Absalom was caught by his flowing hair in the branches of an oak. From the oak was fashioned the Cross of Golgotha, and, thus accursed, by dying with the Savior, was forgiven by Him, accepted by the Disciples, and finally became sacred as the Tree of Mary.

Beneath the oak the Druids carried on their mystic rites. The name *Druid* is from the Greek, *drus*, a tree; first the name *Dryad* was derived, later changed to *Druid*, and from the dryads sprang the belief in fairies, who lived in hollow oak trees. *Druide* is the Gaelic name for oak. In Ireland, the two famous Saints, Bridget of Kildare and Columba of Kenmare, lived in hollow oak trees; while by the credulous children of Erin the oak was held to be a sure cure for many ills, and this belief was carried to the extent that it was said if the guilty could but secure a fragment of the "Oak of Saint Colman" to hold in his mouth he was safeguarded against hanging.

In all lands are legends inspired by the oak and in all lands are famous specimens which are interwoven with local or national history; in England the Parliament Oak and the great Oak of Robin Hood; across the turbulent Channel is the Volkenrode Oak of Gotha, and the Oak of Saintes, France; in America is the Charter Oak at our own Hartford, and the old Natick Oak which sheltered John Eliot while translating the Bible into Algonquin.

The idea culminating in the giant wooden statue of Hindenburg, into which nails were driven by the Germans in an effort to raise war funds, came from a Teuton custom carried out in Vienna, where the famous oak, "Stock am Eisen," stands and into which apprentices, when starting on their careers as journeymen, thrust a nail for luck.



Photograph by Judge, London

#### A MAGNIFICENT SETTING

Framed in by oak and yew trees, the beautiful stone work of Canterbury Cathedral serves as a foil for the multi-colored green verdure, and is a delight to the eye.

them importations, and the architect is not limited in the use of this tree, but may select innumerable types of leaf, coloring, and size to carry out the simplest or most ambitious effects which his talents dictate.

Among the flowers in England, the rose is queen. Gorgeous example of the *Rosaceae* family, cultivated, dignified, over-poweringly sweet, and everywhere present, are used with brilliant effect by the architect and florist. Of course, England has no monopoly when it comes to the rose; originating in Persia, it has spread wherever beauty has meaning and appeal. Think of the roses of Japan, of India, Italy, Spain, France, America, far-away Iceland, and the Islands of the Sea; to-day all the world is its habitat.

And does not the rose recall the barges of the ancients, and the galleys of old Venice? Attar of roses, candied petals, cologne, sachet perfumes, and a thousand and one delights of the boudoir come to mind with memories of the rose in those ages of silks and satins, and cloth-of-gold, when Venice ruled the waves. For the rose is the theme of poets, the test of the painter's artistry, the handmaiden of the romanticist. Did not old Ben Johnson sing:

"I sent thee late a rosy wreath,  
Not so much honoring thee,  
As giving me a hope, that there  
It could not withered be.  
But thou thereon didst only breathe,  
And sendst it back to me,  
Which since it grows and smells I swear,  
Not of itself, but thee!"

Can you wonder that the British landscape architect, knowing the wealth of tradition and intimate history connected with the oak, and with its great beauty and strength, dotes on its use as he plans and works into shape the gardens and parks of his beautiful isle? Many varieties are found in England, some of



But the crotchety old chap was really stealing his song from the Greek poet Philostratus, who, twenty centuries before the bucolic Ben was born, wrote this:

"Although I send a perfume rare,  
'Tis not of grace to you I send it;  
The—gain is to the gift I swear,  
Although I send a perfume rare;  
'Twill earn a sweeter fragrance there,  
Than any power but yours could lend it;  
Although I send a perfume rare,  
'Tis not of grace to you I send it."

Ancients and moderns—all peoples—when wishing to laud their wives, sweethearts, and mistresses compared them to or exalted them above the loveliness of the rose. Dionysius, in the year 190 B. C., waxed eloquent and wrote his beloved the following:

"Which roses do you offer me,  
Those on your cheek, or those beside you?  
Since both are passing fair to see,  
Which roses do you offer me?"

Did not Meleager the Greek, in his "Garland," liken the beautiful lines of Sappho's lyrics to the "Rose petals of song"? And many appreciative musicians have given us sweet songs of roses; recall the melting, plaintive melody and the haunting words of "The Last Rose of Summer"; and the quick-witted composer who wrote the ballad of the "Wild Irish Rose" gave us no mean pleasure; history, romance, song, the deepest sentiments of religion and life, are all affected by the rose, and to it we pay homage. Legends in untold numbers crowd the folklore of all lands in which the rose is always the symbol of beauty, goodness, and gracious loveliness.

But enough of particularization; one can multiply *ad infinitum* references of the rose's beauty, and of the sweetness of the violet, too, and the idyllic purity of the lily, and the countless virtues of one's favorite flower; all flowers have their appeal, as the Creator intended.

And other trees than the oak and yew possess much beauty and find a worthy place in the English landscape; the beech, the plane, the glossy-leaved red-berried holly, the dignified elm, maples, pine, birch, thorn, chestnut, lime, locust, many varieties of willow, and other trees common to our own hillsides and valleys thrive in foggy England. The shrubs are many and of singular beauty, they correspond very closely to our own species, and

great is the variety of coloring, both leaf and flower, and the British architect has cunningly used their various differences for brilliant and alluring effects in his mass plantings and his borders and covers. Annuals and perennials, such as the bronzy-leaved hollyhocks and old-fashioned plants of striking color and proven hardiness, are used prodigally, and aquatics are plentifully indulged in, especially in the more formal work of the large estates.

With all the wealth of naturally grown herbage and hot-house hybrids at his disposal, it is small wonder that the English landscape architect, by accepting Nature as his guide, has made a bower of his "tight little isle" and given to the world the most perfect example of intimate little gardens for the cottager, as well as the glorified creations of his art which surround the huge manor houses and estates.

Again, in the architectural and sculptural embellishments of the garden, the Briton has surpassed most of his competitors; the stone walls which give privacy and dignity, the immense gates which invite hospitality, the fountains, the statuary, the pools, the dials, the hedges sheltering the garden seats, the inviting arbors, the tea houses, the bird shelters, and all the ingenious schemes for entertaining and resting the host and his guests are found in abundance and beauty in the English garden; those quiet nooks where lovers find seclusion, where the student may pore over his books without interruption, and where the bird lover may seek his feathery friends.

The landscape architecture of England is entirely suited to our own country, and many portions of the United States have even more favorable landscapes and climate for the English style of natural planting and for formal architectural treatment and embellishment than England herself. Can we not have more of this beautiful work? It is as natural for us as for the Briton, just as natural for us to use and profit by the work of the English landscape artists as for us to speak the English language. Certain portions of the West and South are more suited to French and Italian gardening than that of the English, but the greater part of our country, with its varied flora and diversified countryside, is ripe for the gardens of Old England; and when we plant, let it be tree or shrub or flower, we will derive a more intimate pleasure from our finished park or garden if we, like the Briton, make an effort to know the history and romance of the species used, for the plant, like a good Samaritan, gives more than it receives.

## Why Scientists Use Latin Names

The oaks afford an excellent illustration of the need of a system of nomenclature of plants and animals uniform throughout the world. In Germany the oak is known as *Eiche*, in France as *Chêne*, in Spain as *Roble*, in Denmark as *Eg*; but throughout scientific literature whether written in New Zealand or Scandinavia, the genus is designated as "*Quercus*." On the other hand some South American and Australian woods not classed by botanists under the genus "*Quercus*" have had the common name of "oak" applied to them because they

are heavy and strong.

The confusion among common names is still further increased when designating individual species. About 250 species of oak are known throughout the world. The name black oak is applied to at least six different species, yellow oak to two, and tanbark oak to three distinctly different oaks. Among scientists *Quercus velutina* Lam. (the last word referring to Lamrack who first named and described it) means but one species and obviates any confusion that might result by referring to the species as black oak.—*The Log*.



# THE WOODPECKERS: BIRD FRIENDS OF OUR FORESTS

By R. W. Shufeldt, M. D., R. A. O. U.

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HERE are no woodpeckers in Madagascar, nor do any occur in the avifauna of any part of the great Australian continent. Upon the other hand, we meet with representatives of this most interesting group of birds in all those areas of the world where we find forests of

sufficient extent to attract them—places where they can obtain such food as they customarily live upon.

In the present article it will be shown how many kinds of these truly beautiful forms we have in the United States, for altogether there are no fewer than forty-six species and subspecies of them in the "Check List" of North American Birds, issued in 1910. Still others may have been described since that date, and a few more may be discovered in the future as inhabiting the least known parts of our country.

For generations past, many biographers of birds throughout the world have published figures and accounts of this

order *Pici* or of the main family of it—the *Picidae*. Their various plumages; their habits; the appearance and growth of their young; their nest and eggs—in short, all about them is more or less known to professional ornithologists, and, to some extent, to those interested in a general way in our birds.

Personally I have never traced the vernacular name applied to the members of this group, nor do I know who first called them woodpeckers. It must be a term of very early origin, for these birds constitute an ancient assemblage; and, as their habits have not changed within

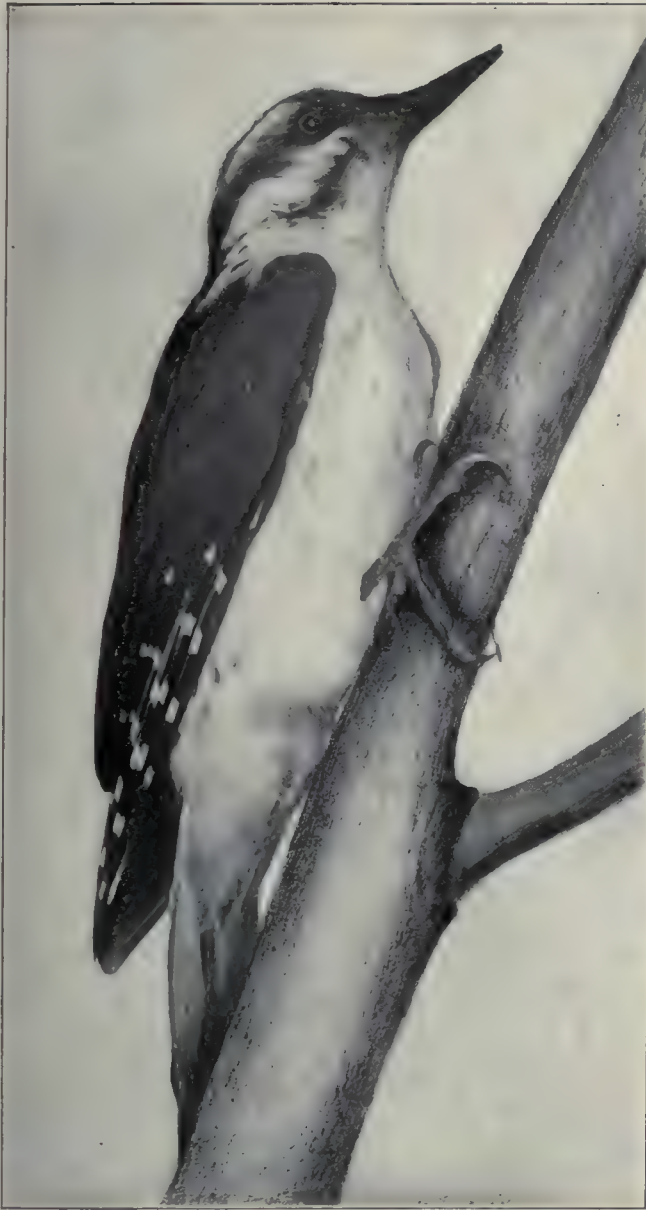
the recollection of man, the name, or its equivalent in several languages, has long been applied to them. Indeed, their most conspicuous habit is to "peck" away at the bark and inner wood of a great variety of trees, and this they do for two very different purposes. When the wood is dead and decaying, these birds attack it with their strong and in some species powerful bills in their quest of insects and grubs that hide in it, as it is upon these that woodpeckers subsist. Less often they obtain similar food from trees that are sound and healthy, with, doubtless, more or less benefit to



OUR LARGEST WOODPECKER, THE IVORY-BILL

Fig. 1. This magnificent species, over twenty inches long, is on the road to complete extermination. It now occurs only in certain localities in the Gulf States. The male (to the left) has a splendid red crest, lacking in the female. Copied from a life-size oil painting by the author.





## BLACK AND WHITE WOODPECKER

Fig. 2. An adult male specimen of Harris's Woodpecker, collected by Mr. Robert Ridgway at Truckee Reservation in Nevada (December 25, 1867), and now in the mounted collection of the United States National Museum. Photograph by the author, somewhat reduced.

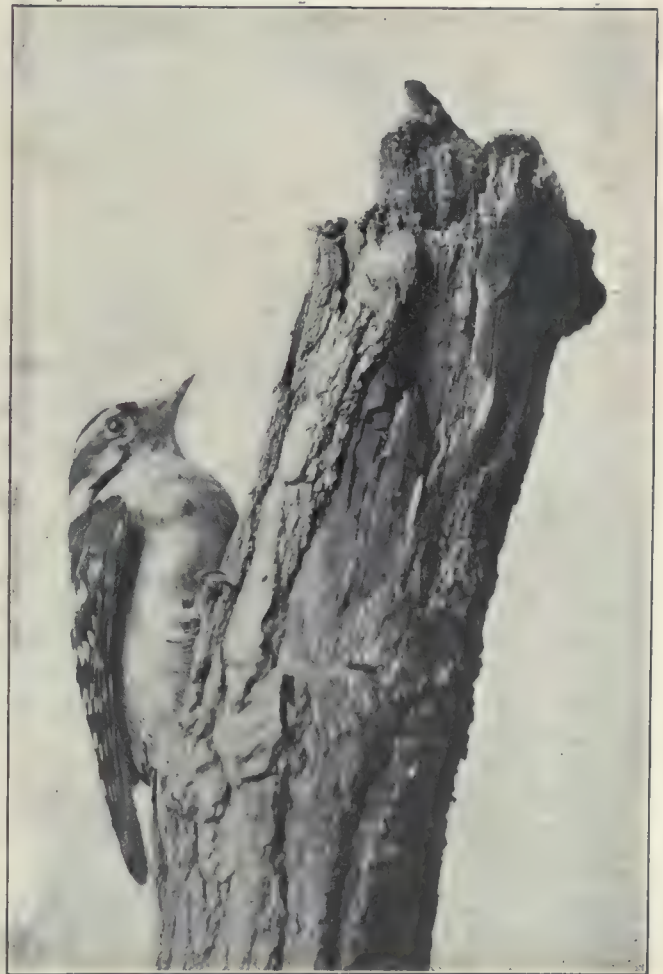
them. Then, it is a well known fact that in sound trees, occasionally in dead ones, woodpeckers excavate deep, cylindrical cavities with circular entrances, at the bottom of which their eggs are laid, and which subsequently shelter their featherless young. For this purpose the trunk of the tree is sometimes selected; while in not a few instances, one of the larger branches seem to suit the bird better. It is on record that woodpeckers have occasionally made their nests in other ways and in other places; for instance, flickers have been known to hollow out a nest on the ground, or to occupy a box fitted up for them.

Birds of other groups have nesting habits similar to those of our woodpeckers; but in no family are these habits so general for all the species. The reader may

readily find examples of this sort in any good work on American birds, of which our natural history libraries possess a generous supply.

In the matter of bodily structure, woodpeckers offer us some remarkably interesting characters, and these, as in all living creatures, pertain to the needs and habits of the forms possessing them. Some of the larger species have beaks that are veritable chisels, being strong and stout, with distal end well adapted for cutting into wood or other substances of a like density. Such bills are best seen in our big Ivory-bill Woodpecker or in the Pileated Woodpecker; while in the smaller forms, as in the Downy and the like, the beak may be weaker, but still fully meeting the demands of the bird possessing it.

The skull is strong and of a characteristic type; while the tongue, in the majority of species, is of a unique sort. In order to quickly secure many of the insects that the bird discovers through persistent search and bill-rapping, instant and unusual protrusion is called for. This is effected in two somewhat similar ways, both of which are shown in Fig. 7. Various, very slender bones constitute the framework of all birds'



## SMALLER BLACK AND WHITE WOODPECKER

Fig. 3. A familiar species is the Downy Woodpecker of the East (*Dryobates p. pubescens*), and the specimen here shown was photographed from life by the author. The adult male bird has a scarlet crescent on the back of its head.





#### THE WHITE-HEADED WOODPECKER

Fig. 4. Confined to the Pacific Coast region and westward to Nevada, this Woodpecker (*Xenopicus albolarvatus*) is a singularly conspicuous bird. This male specimen is reproduced from a water-color by the author (nat. size). (Henshaw, coll., Kernville, California, October, 1875.)

tongues, and this is especially required in the case of woodpeckers. In front, the tongue has a single, median bone; but further back it presents two branches, also containing very slender bones, as shown in the cut. The whole is under the control of a series of muscles, delicate in form and structure, which regulate its protrusion and retraction when not in use. In some species (*Picus*) the inner, free extremities curve around the right orbit as a place to harbor these muscles when not being protruded; in other species, as in our Golden-winged Woodpecker, these ends run forwards in a groove on the top of the cranium, to be stowed away in the right nostril. Quite a chapter would be required to fully describe all that pertains to the anatomy and physiology of this most remarkable contrivance, for which space is not available in the present connection.

The skeleton and muscular structure of the neck of a woodpecker is very strong—indeed, the entire anatomy of the bigger species is by no means lacking in such matters. Further, their clinging to the trunks and limbs of trees demands other modifications in their build, and we find it exemplified principally in the tail and feet of the majority of the species. With but few exceptions,

the feathers in the tail are unusually stiff and strong, with distally pointed ends. This arrangement allows the bird to sustain its most unusual position, or its various attitudes when alighting on or ascending the more or less vertical trunks and limbs of trees. Then, too, the feet are structurally different from the vast majority of perching and other birds; for they have, as a rule, two strong toes in front and two behind—the exception being two in front and only one behind, as in our three-toed woodpeckers. This arrangement assures the best of seizing and holding-on capacities so essential to a woodpecker's peculiar requirements. Again, the entire muscular system of an average woodpecker makes for the best carry-out of its particular needs, and the study of the anatomy of these birds is a chapter of great interest, one to which I have contributed not a few pages and plates. Several of the characters referred to in the foregoing paragraph are exemplified in the figures of



#### AMERICAN THREE-TOED WOODPECKER

Fig. 5. Differing from other forms of the family, the American Three-toed Woodpecker (*Picoides a. americanus*) has, as its name indicates, but three toes instead of four upon either foot. Photographically copied by the author from a plate by Mr. Fuertes.



the present article, and particularly the various forms of beaks, tails, and feet.

An authority at hand truly remarks that "with the possible exception of the Crow, no birds have been subjected to so much criticism as the Woodpeckers. When they are seen scrambling over fruit trees and their holes are found in the bark, it is concluded that they must be doing harm. The Woodpeckers, except a few species, rarely disfigure a healthy tree. But when they find a tree infested by wood-boring larvae, they locate the insects accurately, draw them out and devour them. If, in the years that follow, the borings formerly occupied by these insects are used by a colony of ants, they in their turn are dug out and destroyed."

All the year round — spring, summer, autumn and winter — woodpeckers are thus doing the farmer an incalculable service, not to mention the thousands of barrels of insects, pupae, grubs, and the rest that they utterly destroy, in the way of food, these preying upon the best class of trees that constitute our forests from one end of the country to the other — from east to west and from north to south.

Owing to the fact that the food of these birds may be obtained by them at all seasons of the year, the severest winters notwithstanding, woodpeckers are less inclined to be migratory as compared with the regular migrants, and their insect-destroying propensities are rendered all the more extensive and valuable.

All of our woodpeckers lay pure white, glossy eggs ranging from three or four to as many as eight in number, no attempt being made to construct a nest. At the best they allow a handful or so of the chips they make in excavating the nesting cavity in the selected tree to remain in the bottom, and upon these the clutch rests during the period of incubation. No particular species of tree seems to be preferred by any of the various kinds of woodpeckers for a future

home; and if for any reason trees are undesirable or scarce, as in burnt-over districts for instance, some of the birds of this family, as the Golden-winged Woodpecker, will, without hesitation, burrow into some convenient bank, and use the further end of the excavation as a safe place to rear its young.

Through their flight, most woodpeckers can be recognized at a distance as being birds of that family; for the majority of them progress flying in an undulatory line, much after the fashion of our familiar little goldfinch. This mode of flight is well seen in all of the black and white woodpeckers, and still better in the flicker, as that species is so often observed at long distances from the forests.

Of all the woodpeckers of the bird fauna of this country, no species can in any way compare with the Ivory-bill; it outclasses each and all of them in size, beauty, and economic importance, in so far as its habits affect man's interests. (Fig. 1.) It is a bird of great natural vigor, and has a length of some twenty-one inches or slightly more. Either sex has a glossy, blue-black plumage, only the male possessing a conspicuous scarlet crest faced in front with black. A zig-zag white stripe, pointed at either end, runs from just below the eye, on either side, to the middle of the back between the shoulders. The feathers of the distal parts of the wings are also white, while its powerful, chisel-like bill is of an ivory tint, as the common name of the bird implies. Unfortunately, though apparently not especially through man's agency, the species is for some reason gradually disappearing,



#### THE SAPSUCKERS

Fig. 6. A specimen of Williamson's Sapsucker (*Sphyrapicus thyroideus*) in the exhibition series of the United States National Museum. Photographed by the author, with tree-trunk substituted for museum stand. Courtesy of the Museum.

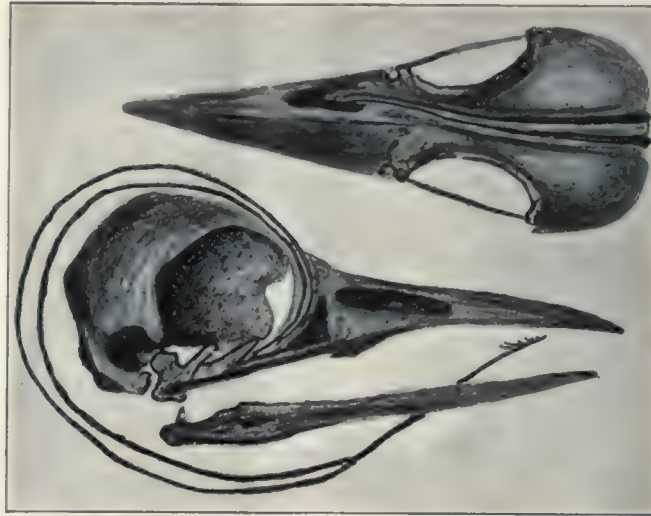
and is, at this writing, to be met with, with any certainty, only in the trackless cypress forests and swamps of the southeastern parts of the United States, from southeastern North Carolina, westward to Texas, in the kind of country it prefers in the area thus included. Most frequently it is found in certain parts of Florida. Per-



sonally, I have met with this bird only once on its range, and that was in southern Alabama many years ago. I failed to collect it as it flew too high above me to be brought down by the simultaneous shots I fired at it of No. 13's from a double-barreled shotgun. Several years later I had the satisfaction of publishing a full illustrated account of its skeleton, to the best of my recollection using a specimen collected by Chapman in Florida.

Ivory-bills usually nest high up in cypress trees, making a deep excavation with an oval entrance, and its clutch of eggs rarely exceeds five in number.

The constant loud calls



#### WOODPECKERS' TONGUES

Fig. 7. Upper figure represents the superior view of the skull of our Golden-winged Woodpecker, in which species the tongue passes forwards in a median groove on the surface of the cranium, to enter the right nostril and extends forwards to end of bill. In still another genera (*Picus*, lower figure) the tongue curves around the top of the skull and surrounds the orbit in front, as shown. Only the bones are represented here, the muscles and other structures having been removed. Partly diagrammatic, and drawn by the author from specimens in his own collection.

and noisy notes made by this grand bird may be heard at long distances as they resound through the dense cypress swamps, where it resides in comparative safety. It is one of the most useful of all the woodpeckers, in so far as it destroys millions of grubs and borers that infest the trees of the forests throughout its range. And why the species is becoming scarcer and scarcer every year is hard to tell, as they are seldom shot by gunners, for they keep well out of the way of all the usual bird destroyers. It is a great pity, for it is one of the most magnificent inhabitants of the great forest areas of the Southern states, and the bird lovers of that



#### WILLIAMSON'S SAPSUCKER

Fig. 8. This curious species occurs in the forest districts of the mountains of western North America and southern British Columbia. Southward, it extends to New Mexico, southern Arizona, and California. During the winter months it may be found in the timbered districts of Mexico, western Texas, and lower California. Photographed by the author. Courtesy of the United States National Museum.





THE PILEATED WOODPECKER

Fig. 9. An adult male of this species has a length of nearly twenty inches, and is a wonderfully handsome bird with its black and white plumage and brilliant crest of red. Photograph by the author. Courtesy of the United States National Museum.

region are not few by any means. It has but one rival in our avifauna, namely the Pileated Woodpecker—a much smaller species and not so brilliantly plumaged, which will be described further along.

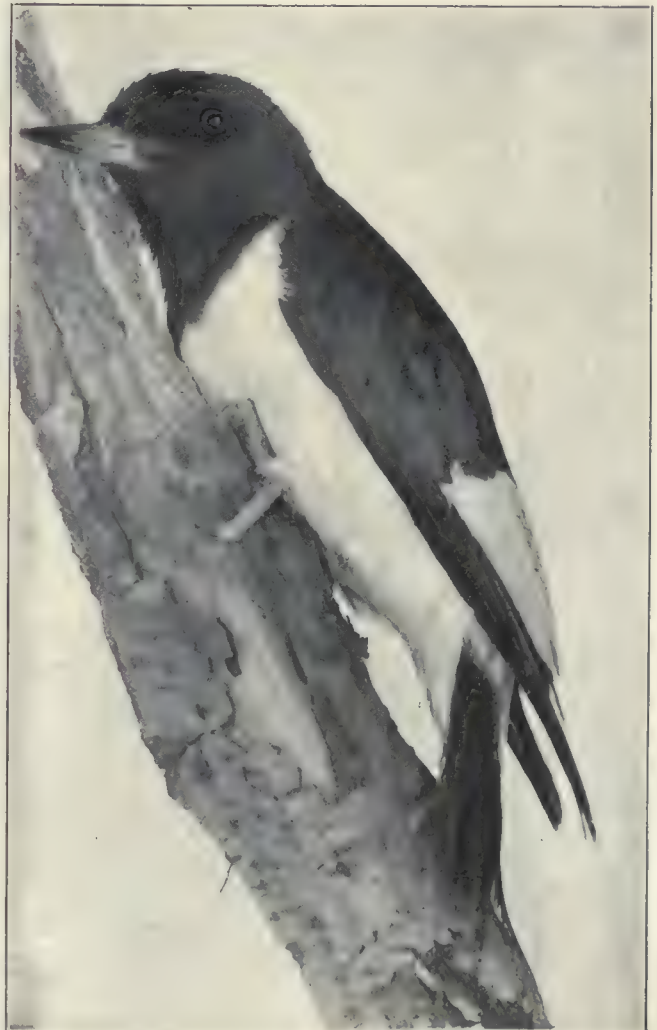
Audubon gives us a very unusual account of the Ivory-bill, stating that it “confines its rambles to a comparatively small portion of the United States, it never having been observed in the Middle States within the memory of any person now living there.” Yet he tells us in the next paragraph that “the species may be accidentally seen in Maryland,” and that it occurs all over the South, westward to Texas, and northward to the Ohio River!

He apparently gives us at least one excellent reason for its gradual disappearance when he says: “Travelers

of all nations are also fond of possessing the upper part of the head and bill of the male, and I have frequently remarked, that on a steamboat’s reaching what we call a wooding-place, the strangers were very apt to pay a quarter of a dollar for two or three heads of this woodpecker. I have seen entire belts of Indian chiefs closely ornamented with the tufts and bills of this species, and have observed that a great value is frequently put upon them.”

Wilson, who gave us some very amusing accounts of his experiences with a captive Ivory-bill he once had, emphatically states that the species is a most powerful protector of our forests, in that it consumes as food no end of destructive insects and their larvae.

From the famous Ivory-bill we pass to rather a long list of woodpeckers that exhibit certain patterns of black and white in their plumages, while the males may have a patch or small patches of bright red at the back of the head. The black and white is generously arranged in longitudinal bars on the head with transverse ones on the wings, while the lower parts are entirely white, with the upper one centrally white and black on either side.



THE RED-HEADED WOODPECKER

Fig. 10. The one here shown is a full-plumaged male, and was photographed from life, natural size, by the author. The young have a plumage entirely different from their parents, the latter being very conspicuously marked, as set forth in the article.





#### THE RED-BELLIED WOODPECKER

Fig. 11. In certain localities Red-bellied Woodpeckers occur throughout the United States, ranging into central Texas. The specimen here shown is in the exhibition series of the United States National Museum. Photographed by the author. Male, in full plumage.

The Hairy Woodpecker and its near congeners, as well as the species and subspecies of the Downy Woodpeckers possess plumage patterns after this order, with several distinct variations. Audubon got the black and white series of woodpeckers all mixed up, while Wilson appeared to have known only the Downy and the Hairy—indeed, the latter author described but ten species of woodpeckers for the United States, and these included only the most abundant forms. Audubon remarks that “Wilson, it appears, did not believe in the existence of the Canada Woodpecker (*Picus canadensis*); yet his figure of the Hairy Woodpecker seems to me to be a representation of that species, while his description belongs in part to both,” Audubon figured the “Canadian Woodpecker,” and yet we have no bird bearing that vernacular name in our official list of woodpeckers. Quite possibly it was the bird now called the Northern Hairy Woodpecker (*D. villosus leucomelas*); but to untangle all such questions in a list of birds now numbering over forty forms would be quite out of place in the present connection. However, for the benefit of those

commencing the study of these birds of our avifauna, it may be as well to state that such species of Audubon describes and figures as the “Canadian Woodpecker,” Phillips’ Woodpecker (“Massachusetts. Very rare.”); Maria’s Woodpecker; Redbreasted Woodpecker; Banded Three-toed Woodpecker, and so on, do not occur in our official list.

Every species of our Hairy and Downy woodpeckers are useful in destroying a great number of different kinds of parasitic insects, their larvae, and grubs, infesting every variety of forest tree, as well as those of our orchards and gardens. These birds should be protected and encouraged at all times, and teachers of American ornithology should make every effort to instruct our school children in the matter of recognizing them in the woods and fields, to the end that they may not be targets for the merciless air gun or the more effective weapons of the boy scouts. Good figures of these black and white woodpeckers are here given in Figures 2 and 3.

Our Red-cockaded Woodpecker is a blacker bird than either the Hairy or Downy, and about between the



two in the matter of size. The male has a fine scarlet stripe over either eye, and this character serves well for identification. Sometimes, in the forests, it is mistaken for the Downy; but a good student of birds is not likely to confuse the two.

T. Gilbert Pearson has given us a most interesting account of this species, and he says among other things: "And now comes the most curious habit of this interesting bird. Before a single egg is laid each spring the birds peck hundreds of small holes through the bark about the nest from which the turpentine begins to flow. This soon makes a shiny, sticky surface all around the tree for two or three feet above the nest and for several feet below it. Why this is done we can only conjecture, although the birds doubtless have a very good reason. It is certainly true that none of the ants that sometimes attack young birds could crawl across this no-man's-land, and it is equally true that the nest will not be troubled by the flying squirrels that are everywhere abundant in the pine forests of the South."

Equally interesting species are the Texas Woodpecker, the San Lucas and Nuttall's, and the Arizona Woodpecker, but space will not admit of my referring to their histories here. Apart from the Ivory-bill, all the species thus far mentioned belong to the genus *Dryobates*—a word from the Greek meaning "treaders of oaks," which, to an extent, is true, as all these birds prefer the oaks to the exclusion of the pine trees—a very interesting fact. No fewer than nineteen different kinds of woodpeckers in our country have been referred to the above genus; and between it and *Picoides* (created to contain the Three-toed woodpeckers) we have a very curious type of this family, namely the White-headed Woodpecker, *Xenopicus albolarvatus*, a bird of the forests of the Northwest, from southern British Columbia to southern California, east to Idaho and Nevada (Fig. 4). This bird has a most striking plumage, as the head and foreneck are pure white, the male only having the back of the head and nape a rich red. All the rest of the plumage is of a

shiny black, the only exception being the large feathers of the wings, which for the most part are white. They live principally upon ants and the seeds of the pines in about equal parts. It is said that the female may lay as many as seven eggs, the hole of the nest rarely being more than fifteen feet above the ground and cut in a pine or fir tree. The late Dr. J. C. Merrill, of the Medical Corps of the United States Army, left us an interesting account of its habits as he observed them at the time he was stationed at Fort Klamath. Among other things he tells us that "on most of the pines in his vicinity

there are many short stubs of small broken branches, projecting an inch or two from the main trunk. When the sun is shining, these projections are lighted up in such a manner as to appear quite white at a little distance, and they often cast a shadow resembling the black body of the bird. In winter when a little snow is lodged on these stubs, the resemblance is even greater, and almost daily I was misled by this deceptive appearance, either mistaking a stub for a bird or the reverse."

For two years I made continuous efforts to obtain a skeleton of the bird just referred to, in that I might describe its osteology; and when one was finally sent me for that purpose, I was enabled to include it in my work upon that subject.

We have some four species of Three-toed woodpeckers, and they are chiefly northern birds with interesting habits. Mr. Fuertes has given us a good representation of the American Three-toed species, and this I have reproduced in Figure 5, though not as large as the

original. The male is the lower bird, and the top of its head is a rich yellow, while for the rest the plumage is black and white as indicated. To some, these birds are known as "ladder-backs" from the transverse black and white bars of that part of their plumage. As a rule our Three-toed woodpeckers do not migrate, but remain in their habitats throughout the bitter northern winters, living upon hibernating insects and grubs beneath the bark of various trees. They are very silent birds, and the hunter often passes one without noticing it.



YOUNG FLICKERS

Fig. 12. We have here a most remarkable photograph made by the author, of a Golden-winged Woodpecker's nest containing newly hatched young. A full description of it occurs in the text of the article.



Fuertes, who stands, in my estimation, far and away of Audubon as a painter of woodpeckers, not to mention a few other birds, has given us some wonderful portraits of them, and his plate portraying the Red-headed Woodpecker (adult and immature) with a pair of yellow-bellied Sapsuckers is certainly a picture of great beauty and very true to life. I once had alive a specimen of the first-named bird, and I succeeded in obtaining a fine photograph of it which is here seen in Figure 10. It is one of the handsomest birds of our country, with its brilliant crimson head and black and white plumage, as shown in the figure. Immature birds, which I have likewise photographed, are entirely different in plumage as compared with the adult ones, the upper parts, including the head, being brownish, streaked with darker tints, the body being otherwise marked with black, gray, and so on.

Preceding the Red-head in our official list of birds, we have five different kinds of woodpeckers known as Sapsuckers (Fig. 6) and the Pileated Woodpecker with the northern species of it (Fig. 9). The former are birds with wonderfully beautiful plumage—black, white, crimson, red, yellow, and other colors, arranged in most attractive patterns. Space will not admit of my describing any of these in detail; and to appreciate their beauty the various species must be seen and compared. Their habits are extremely interesting and good accounts of them have been given us by a number of our descriptive ornithologists. These birds puncture various trees and lap up the exuding sap with their brush-like, short tongues; and to this extent they are often a harmful factor in our forests, inflicting serious damage to the timber in the Southern States. However, this is offset by the good they do in insect destruction.

In the same genus with our Red-headed Woodpecker we have the Ant-eating, the California, and the Narrow-fronted woodpeckers. Then, in the next genus there is that splendid species, Lewis' Woodpecker—a bird that I had abundant opportunity to study, many years ago, in the Big Horn Mountains, as well as in the scantier

timber that lined the streams in central Wyoming. There is so much black in the plumage of one of them that many know the bird as the "Black Woodpecker" or the "Crow Woodpecker." It is of a rich red and gray beneath, and an adult specimen has a length of somewhat exceeding ten inches. It has some very unusual habits, such as leaving its perch (upon which it sits cross-wise like a robin) and flying out like a flycatcher after insects. It also resorts to the ground to capture ants and various other insects upon which it feeds. It breeds in cavities

prepared by other birds; and at certain times the species is gregarious, during which they are noisy. Being so many in one flock, they can be heard for some distance. As a matter of fact, considerable space would be required to give an adequate history of this remarkable bird.

Three handsome woodpeckers, namely the Red-bellied, the Golden-fronted, and the Gila Woodpecker, form the genus *Centurus*, the first being an eastern species well known to our student of birds (Fig. 11). The other two are western forms, or, in the case of the Golden-fronted, southwestern, as its range is in Texas south in to the Valley of Mexico.

Next in size to the magnificent Ivory-bill, we have, throughout eastern United States, another big, black woodpecker, the widely known Pileated, which may attain a length of nearly twenty inches (Fig. 9). It is said that it requires as much as a month for a pair of these birds to excavate their nest in a solid tree, the excavation often going to the depth of more than a

yard. A writer at hand says that "the food of the Pileated Woodpecker does not interest the farmer or horticulturist, for it is obtained entirely from the forest. The bird does not visit the orchard or the grain field, but all of its work in the forest helps to conserve timber. Its animal food consists probably of beetles and ants and its vegetable food of wild fruits."

Finally, the list of United States woodpeckers is completed by three species and three subspecies of birds generally known by the name of Flickers, although



GOLDEN-WINGED WOODPECKER

Fig. 13. Young male Flicker shortly after leaving the nest. Photographed from life by the author. Note the black band extending down from the bill. This is red in certain western species, and entirely wanting in the females of the various forms of the genus. A species widely known throughout the country.



they have a great many vernacular ones applied to them. As a group, they constitute the genus *Colaptes*, our common Flicker of the East, widely known as the Golden-winged Woodpecker, being *C. a. auratus* (Figs. 12 and 13). This bird has had many historians since the first days of the Republic.

Flickers consume no end of insect pests, a few ground beetles, and a very small amount of grain and fruit; so that, as far as man is concerned, the bird is a friend, and should be protected to the limit. It has but one unfortunate trait—in common with other species—namely, that of sowing poison ivy seeds broadcast. This is a trick we have no means at our command to break him of—at least none has thus far been proposed. This bird has a bill quite different from the average woodpecker, being rounded and somewhat curved downwards.

In cities the Flicker seems to have no dread of man;

and last summer I passed within a yard of a fine male on the Smithsonian grounds, it being engaged at the time in pulling out some worm or other hidden in the sod. The bird looked at me inquisitively once or twice, but kept steadily at the task upon which it was so busily engaged.

One of the most absurd accounts of this bird was left us by the Count de Buffon, and one of the best accounts by Wilson—the latter, by the way, well raps the Count for his untruthful history of the species. But this is a side of ornithological literature which, though intensely instructive, can in no way be entered upon in the present article. On the other hand, perhaps enough has been set forth to convince those who may previously have had their doubts, that, taken as a family, the woodpeckers are among the best of our bird friends, in so far as forest protection goes—and that is a very important item.



FORESTRY STUDENTS PLANT TREES

International Newsreel Photo.

Students of the New York State School of Forestry are pictured here planting trees on abandoned farm lands. Young forest trees have been used to aid in the national plan of reforestation, as in the entire country there is a total of 85,000,000 acres that will undergo this natural treatment. The economic welfare of the nation depends a great deal upon the forests, and the United States Forest Service has been instrumental in urging and aiding in reforestation in many parts of the country.



# "CUT CLEAN AND KEEP OUT FIRE"

By R. S. Kellogg

**I**N a nutshell, this sums up the opinion of many foresters in New York State as to the least expensive and most practical means of securing continuous production of a forest crop of value in the Adirondack region.

This does not mean that leaving nature to take her course after cutting will bring back a new stand of the same kind of timber as the old one, nor that intensive silviculture will not produce a more valuable crop than



NATURAL GROWTH OF HARDWOOD SAPLINGS FOLLOWING CLEAN CUTTING AND PROTECTION FROM FIRE

no silviculture at all, but forestry must pay its way and methods must be used whose cost will not be prohibitive when carried over the period of timber growth.

The clean cutting of spruce or of mixed spruce and hardwood may be followed by a forest consisting entirely of poplar, birch, maple and other hardwoods, but who can say that such a forest fifty years hence may not be as valuable as one of spruce? It does not require a long memory to recall that forests in the Adirondacks were originally cut over for pine, then for pulpwood, next for hardwoods with oftentimes a large amount of cordwood still left after the last cutting, and that in each successive cutting the value per acre was greater than in the preceding one despite the elimination of what was previously considered the only valuable species.

Considerations such as these were the subject of lively discussion and interested observation at the recent meeting of the New York Section of the Society of American Foresters, near Tupper Lake, participated in by representatives of the forest schools, foresters of the Conservation Commission and foresters in a wide variety of private undertakings. It was a meeting in the woods and about the woods and a nearby lumber operation which exhibited all the stages of cutting and growth from pine to cordwood was a most instructive example

of the methods used by nature in restoring and maintaining a forest when unhampered by fire.

On the site of the first photograph, for instance, the timber was cut entirely clean 28 years ago for camp wood over a considerable area. Today there is on this same ground a beautiful young stand of yellow birch, maple and other hardwood saplings, straight, tall and in good density. In fact, measurements made in 1920 by Professor Recknagel, of the Cornell Department of Forestry, showed at that time a stand of  $22\frac{1}{2}$  cords per acre, a growth of nearly nine-tenths cord per acre per year of wood fibre, produced entirely through the unaided efforts of nature to maintain the forest.

The second photograph shows a cutting made two years ago within a short distance of the first for the purpose of hardwood lumber, there being left behind trees too small or too defective to utilize profitably. There are now coming up on the ground a large number of hardwood seedlings, which if fire does not get in, will ultimately result in a forest of very uneven age and one containing many older trees, which in addition to being of little value themselves will have been a



CONDITION OF THE FOREST TWO YEARS AFTER THE USUAL HARDWOOD CUTTING

hindrance to the growth of the more even aged younger stand. Obviously, had this stand been cut clean as in the first photograph, the succeeding forest would have been more valuable than the one that will now follow. However, the cutting was determined by the rules of practical utilization which forbid the taking out of any tree that will not pay its way. Had there been a market for the remaining firewood, a better forest would have been secured than the one which will now result.

By the way of contrast with these examples of natural reforestation, a snapshot is shown taken in the noted



coniferous plantation at Axton, established by Dr. Fernow twenty years ago on land which was old pasture at that time. This land is now covered with a thrifty growth of Scotch and white pine, Norway spruce and

investment twenty-five to fifty years hence, taking all costs into consideration and subjecting them to the rigid formulae of compound interest—the even-aged stand of hardwood reproduced by nature after clean cutting or the coniferous forest planted by man upon clean soil?

The New York Conservation Commission is also doing a splendid work in making the Forest Preserve usable through the construction of typical Adirondack camps with concrete fireplaces for cooking.

## Forestry Meeting in South Carolina

Upon invitation from the Governor of South Carolina, a number of representative citizens of that State met at the Capitol to discuss the forestry needs of the State. Representatives from the Forest Service attended the meeting and explained the character and extent of co-operation, particularly that in forest fire protection, which the Federal Government could offer. The concrete result of the meeting was the passage of a resolution recommending that the Governor appoint a forestry committee to prepare a bill for introduction in the coming session of the legislature, which would provide primarily for a State forestry organization, State Forester, fire protective system, and funds to carry on the work.



NEW YORK FORESTERS VISIT THE CONIFEROUS PLANTATION MADE AT AXTON IN 1902 BY DR. FERNOW

European larch. The larger specimens run up to 8 in. in diameter and 25 ft. in height. It will be interesting to note which will give the greater return upon the

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## CANADIAN DEPARTMENT

By ELLWOOD WILSON

Last year was a very bad year for forest fires and the early part of this season also, and after a strenuous time of fire-fighting, everyone was breathing a sigh of relief that the fall had come and all our troubles were over. After an exceedingly cold spell, the weather became very warm and dry and no rain fell. Day by day passed and the woods grew dryer and dryer, the brooks dried up and the water in the rivers and lakes got very low. Suddenly fires began to spring up as if by magic, especially in the neighborhood of towns and villages. Hunters were going out after partridges, the weather was so fine that people were going off for picnics in their cars and everything in the way of slash and stumps was so dry that it seemed an ideal time for the farmer to clean up his land. Then high winds came and the fires began to spread. Then forest fires began to break out and we woke one morning to hear of the terrible disasters in Northern Ontario where whole towns and villages have been burnt up and many lives lost. Then rain came and every one breathed more freely only to hear that the fire fiend had visited northern Quebec and burnt two towns, but without any loss of life. The destruction has been appalling, in Ontario 48 lives and eight million dollars worth of property, not counting timber destroyed. Haileybury, a town of 3000 inhabitants was wiped out, also Cobalt and several other towns, 700 square miles in all. In northwestern Quebec the towns of North Temiskaming and Nedelec were destroyed. Fires in the St. Maurice Valley and at Lac Frontier also took their toll of timber. Whole families have been destroyed, one family was found suffocated in a root cellar and from the attitude in which the bodies were found it was evident that they had given up hope, had taken leave of each other and resigned themselves to die.

The whole thing is heartrendingly pathetic and so unnecessary that one could weep in impotent rage over the situation. Every fire (except those caused by lightning, less than a fraction of one per cent) is set by a human being, is actually lighted by a match, a cigarette butt, ashes from a pipe, a neglected camp fire or a spark from a railway train or steamboat. No fire ever starts from spontaneous combustion. Therefore every person who lives near or who has occasion to go into the woods must be educated to be careful and to have a sense of responsibility. At least a dozen times during the past summer I have seen fires started along the highways by people driving by in motor

or other vehicles. Probably the greatest menace is the cigarette, because so many are smoked and there is danger from the match used in lighting them and in the butt which is always thrown away.

Fires occur every year, every so often we have a dry season when holocausts occur, like the Mirimichi fire, the Cobalt fire, the Cloquette fire and now the Haileybury fire. Why as intelligent beings should we not learn from the experience of the past? Why do we let such a situation continue. I have never found a man who was willing to admit that a forest fire was a good thing, but I have met men who pass for intelligent men of common sense who say that we will always have bad fires. The Manager of the Woods Department of a large company years ago told me that God sent the fires just as he sent the rain. Only last week the woods superintendent of an operation told me that there was no use in putting out a fire because it would only burn again next year. A man whose job is to extinguish fires said that once a fire was started nothing but prolonged rain would put it out. Others say you cannot stop smoking in the woods. Price Brothers and Company stopped their men from smoking except in camp by taking away their matches and by a heavy fine or imprisonment for smoking. Another difficulty is the attitude of some of the magistrates who will not fine a man for setting fires or will let him off with a fine of a few dollars. A settler, this summer, applied for a permit to burn a few acres of poor land and was refused. He set his fire in spite of this and burned up 150 square miles of timber land.

Fires have been set by gangs operating in the woods and no action taken in the way of dismissal, fine or reprimand.

The whole trouble is lack of appreciation of the desperate situation. We cannot afford to have the timber burnt up. Wood is of such basic importance that our forests must be saved from fire. The public must be made to realize the situation, they must understand that it is just as bad to burn young timber as it is to burn trees which are already merchantable. When the latter is burnt the loss is heavy right at the moment, but without the young growth there will be no future forest. Then too, in a country like Quebec and northern Ontario, the country is absolutely unfitted for anything else but the growing of timber, except in relatively small areas. One forest fire sometimes burns away all the soil and two or three invariably do so. I traveled through a

section this summer, where ten years ago there was virgin timber. Today, after repeated fires, the tops of the hills are burnt down to the rock and wide stretches of country are so burned that for over a hundred years there will be no timber of any sort or kind.

What can be done about it all? What practical means can be taken to stop this terrible devastation, which if continued will wipe out our wood-using industries and leave us a desert? Can we not learn the lesson from the fate of China, North Africa, Spain and Persia? Are we so blind to our own interests, to our responsibilities, so silly that we are going to let this thing continue? Canada has good fire laws and the governments have ample authority and can have ample means to stop fires. The lands belong in most part to the governments and they have absolute control of them. There is no escape from the responsibility, no excuse for not having proper fire prevention. It requires intelligence and firmness. Children in the schools must be taught that a forest fire is *worse than the fear of hell*. Railroads must be forced to take adequate prevention measures. Settlers must be watched during all dangerous periods. Men working in the woods must be absolutely prevented from smoking. Hunters and fishermen and campers must be careful or must be barred from the woods. As far as lumber and paper companies are concerned, the responsibility for fires set by their own employees is squarely up to the managers. If the men working in the woods *know* that the company will not stand for fires, that if they are careless or set a fire it is cause for immediate dismissal and prosecution they will at once become interested and careful. If in a district a man who sets a forest fire is blacklisted others will soon stop being careless. I have seen a case where the manager of a company was very anxious not to have fires, but his woods superintendent held the opinion that men could not be prevented from smoking and that fires were bound to occur, so his chief's efforts were completely nullified.

It seems to me that the danger has become so great that about the only means for checking fires is to have a force of fire rangers who at the same time have police powers and can arrest and bring out any man caught contravening the law, either in or out of the forest. Magistrates must then be educated up to the point where they will consider setting a forest fire or burning slash without a permit in the same category as arson. In-



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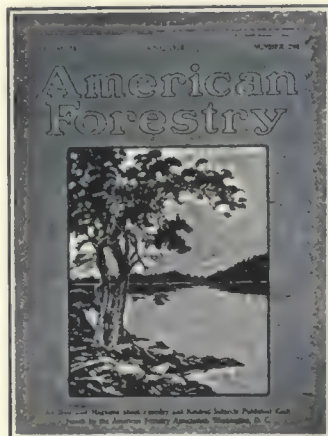
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cendiarism should be punished with a long term in prison. Every effort through the churches, the schools, forestry associations and the like, must be made to develop a public sentiment which will demand that no fires be set.

No one seems to realize the terrible inroads made by fire on the forest wealth of eastern Canada. It appears only in all its appalling significance when one flies over the country in an airplane and sees the burns stretching for miles and miles. When one sees, in this way too, the relatively small areas of softwood timber the outlook for the future is pretty gloomy.

The government of Ontario through its Forestry Department has made excellent progress with its aerial reconnaissance of the country north to Moose Factory and Fort Albany on James Bay. Three hundred and fifty hours have been spent in the air sketching in types of timber and making eye estimates. A few pictures have been taken. Due to lack of maps some system of control for sketching operations and aerial photography has to be worked out. The country is not very well watered with lakes and most of the timber is in the river valleys. The timber is mostly black spruce and white birch and there are very large muskeg or swamp areas. This is the most extensive use of the airplane for forestry work and the flying has been carried out by the Laurentide Air Service, Ltd., with significant success.

The Barnjum prize for the best essay on the control of the spruce bud worm has been awarded to Mr. Otto Schierbeck of Price Bros. and Company, Ltd. The essay was excellent and showed hard and careful work. Owing to the fact that all of the information in regard to the bud worm had been collected and published by the entomologists of the Dominion Entomological Branch, the judges decided to divide the prize of \$5,000 between the successful essayist and the entomologists.

The Province of Nova Scotia has made a notable stride and has withdrawn from settlement all forest land. This is what should be done everywhere and is a vital step in the whole program of conservation, because when land which is only good for forests is thrown open for settlement the forest is destroyed and the settler has no opportunity to make a decent living on such poor soil and sooner or later moves off leaving a burnt forest and a few abandoned shacks as the result of years of grinding toil.

The Institute of Industrial and Domestic Arts, Gardenvale, Quebec, now conducts correspondence courses in pulp and paper making and expects soon to have a course in elementary forestry for woods and fire rangers, inspectors and scalars.

### FOREST POLICY REPORT

The Chamber of Commerce of the United States issues the following state-

ment with regard to the work of its Committee on Forestry Policy:

"The report of the committee has been received by the Board of Directors of the Chamber, but as yet no action has been taken. Postponement of action until the November meeting of the Board will afford an opportunity for any members of the committee who may not agree with the report, to submit minority reports.

"Pending consideration of the report by the Board in November, the report is not being released for publication. Under the Chamber's procedure a committee report is released only when sent out for referendum vote."

### HOW TO INTEREST THE PUBLIC IN FORESTRY

The following extract from the *Outlook* may be of interest on the question as to whether the organ of the American Forestry Association should be edited from a purely technical standpoint, or so as to appeal also to the non-technical public.

*The Outlook*, September 20

John Morley, when editor of the *Pall Mall Gazette* had for an assistant another distinguished journalist, W. T. Stead. Morley, according to a recently published book had the scholar's predilection for experts, while Stead questioned their availability in journalism. "Suppose you had to have an article on sun-spots," said Morley, "would you get an astronomer to write it who knows everything about



the subject, or a journalist who knows nothing?" "The journalist, most assuredly," Stead replied; "if you get an astronomer to write the article he will write it for astronomers and use terms which your readers will not understand. The net effect will be that your reader will not learn what you want him to." "But," queried Morley, "is that not setting ignorance to instruct ignorance?" "By no means. It is setting a man who is intelligent to tap the brains of a specialist and then to serve up his knowledge so that it can be understood by the ordinary reader." Apparently the debate ended here.

#### PERPETUAL TIMBER SUPPLY FOR LUMBERMEN

Sooner or later the timber accessible to a sawmill becomes exhausted, says the Forest Service, United States Department of Agriculture. The operators are forced to junk a large part of their equipment, tear up their railroad tracks, abandon their roads and move to other sources of supply. To the lumberman this means a loss of money and time; to the workers in mill and woods it means either seeking other employment or new fields of activity; to the community it means a serious and sometimes a fatal setback.

Relief from these conditions, forest ex-

perts state, marks a recently proposed sale of National Forest timber as the most unique offer ever made by the Government to lumbermen. The timber to be placed on the market is within the Malheur National Forest, Oregon, and the Government proposes to open up the region on the basis of a perpetual supply of forest products. Forest Service estimates show that 60 million feet of yellow pine saw timber may be cut yearly for all time, thus insuring to the local industries the opportunity to have a continuous stream of raw material, permanent bases of operation and staple employment for woods and mill workers.

The area which totals 550,000 acres and contains 6700 million board feet of saw timber is, according to foresters, one of the last great timbered regions in the United States to be opened up for industrial development.

The first unit to be put on the market is now being offered to the highest bidder and includes 890 million feet to be cut under a 20-year contract.

#### CAMPS IN STATE FORESTS

To encourage use of the recreational facilities of the State Forests, the Department of Forestry has authorized the construction of seven additional public camp grounds in Pennsylvania this fall. These

new camp grounds, and the eleven similar recreational areas which were developed last spring, will provide headquarters for hunters who go into the woods this fall.

Several camp grounds will be equipped with log lean-tos, stone fireplaces, walled-up springs, garbage cans, comfort stations, and in some instances, public telephones. Use of the camp grounds will be free to the public, but permits, which will be issued by the local forest officers, will be required when campers desire to occupy a site for more than two days.

Three of the new camps will be equipped and situated particularly for the use of automobile tourists who carry camping outfits with them. These camp grounds, however, are not restricted to their use. They may be occupied also by sportsmen and picnickers. Four other new camp grounds will be prepared by the department for the convenience of sportsmen and campers.

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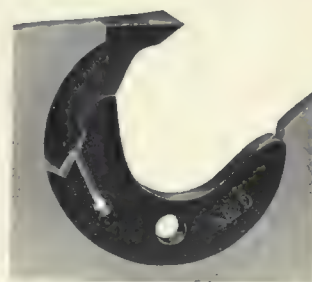
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To help you solve the shady corner problem, we offer the following "Shady Corner Collection" for autumn planting:

Viburnum Lantana (Wayfaring tree), 3 to 4 ft.	\$ .99
Acanthopanax pentaphyllum, 4 to 5 ft.	1.10
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### THE RED SCOURGE

"On the tenth day of July a man set fire to more than a score of homes. Every home was entirely consumed and there was no insurance. The man went on his way, if not rejoicing, at least without visible evidence of regret. He had no fear of punishment because the homes he had destroyed were not yet built; they were still in the tree trunks awaiting the magic wand of industry to give them habitable form. But economically these homes were destroyed as surely as though the trees had been made into lumber and the lumber into structures. And this is the way it happened:

"It was the vacation season and an automobile carrying a party of tourists stopped on a road that wound through a magnificent stand of Douglas fir, in Western Washington. The travelers sat in rapturous admiration of the quiet forest scene and rhapsodized over the great trees that columned their majestic beauty as far as the eye could see. One of the men of the party lit a contemplative cigarette and tossed the match to the side of the road.

"Half an hour later an airplane forest patrol flying high above the mountain range saw a yellowish smoke ballooning over the tree tops. He moved his control and turned in that direction. Upon the chart in the machine before him he located the fire approximately, then returned quickly to a mountain fire station ten miles away. \* \* \*

"After what seemed an interminable wait, the patrol noted various gangs of men at work. They were combating that most terrifying, most ungovernable and dangerous of all rebellious elements—the forest fire. For a day and night and another day the battle waged. Grimy men, black as the charred trunks around them, worn to the last stages of exhaustion, fought on—cutting away underbrush, dynamiting logs and trees, beating out the slinking fringes of advancing ground fire, shouting one to another above the crackling inferno of heat and smoke, panting like hunted animals around the water barrels where they slaked their thirst with the luke-warm liquid, but gaining, almost imperceptibly at first, yet gradually with greater certainty as the weary hours dragged on. And amid the confusion and crash of falling timber the ranger and foremen generalised the battle.

"Several days later a wide, barren scar lay upon the mountainside, still smouldering in places where the black splinters of the charred stumps pointed like accusing fingers, and still sent out masses of yellowish white smoke. The scar covered hundreds of acres and it would continue to smoulder and smoke for weeks, while all about in the adjacent woods were fire guards constantly vigilant to see that the enemy did not creep out and strike again.

"And far away the automobile tourists

journeyed carefree and utterly unconcerned. At a sawmill they stopped for a few minutes to watch the logs in slow procession from the pond to the band saws. 'What a shame,' exclaimed the man with the cigarette, in a burst of sentimental revolt, 'What a shame to cut down those beautiful trees.'

### FOREST FIRE FIGHTING COMPANY

Through the effort of leading citizens, foresters and fire wardens, Mt. Carmel, Pennsylvania, now claims distinction for having in its midst a fully organized forest fire fighting company. The first so far as is known in the United States.

The company was organized to satisfy a pressing need for better forest fire protection in the vicinity of Mt. Carmel. This being realized by the progressive people of the town it only remained for a leader in the person of W. W. Smith, District Forest Warden of the Philadelphia and Reading Coal & Iron Company, to make effective the desire of the community for improved forest conditions.

The organization was effected by first securing contributions from individuals in the locality. This done a building of the bungalow type was planned and started on the mountain side south of and adjacent to Mt. Carmel. This building is now complete and is 20x20 feet in size with a porch on three sides. It overlooks the town of Mt. Carmel and the lands of the Lehigh Valley Coal Company, Madeira Hill & Company, Susquehanna Collieries Company and the Philadelphia & Reading Coal & Iron Company. The cost of building and improvements to date is about \$2,000.

In addition to the building provided for the use of members it is planned to construct a swimming pool, tennis court and trap-shooting grounds. The primary purpose of the company is to "organize and keep in readiness an efficient corps of forest fire fighters and to further the work of forest fire prevention." To this end the State Forestry Department will supply all needed fire fighting tools, while the coal companies affected will provide additional equipment such as fire fighting pumps, uniforms, etc.

The actual fire fighting work will be done by active members, limited to 30 in number. These will be divided into three crews of ten men each.

The leadership will be vested in a Chief Forest Protector and three assistant Forest Protectors whose duties will be to organize and train for quick response to and prompt suppression of all forest fires in the vicinity.

It is the belief of many that this pioneer work in forest protection will grow and spread from a mere local movement for better forests to one that will rapidly include all towns in the anthracite region and eventually those in wooded regions throughout the state.



**WOOD VS. THE COAL SHORTAGE**

That the forest land of New York might produce sufficient wood to relieve a restriction in coal distribution is one of the possibilities in supplying substitutes for coal in case of a coal shortage.

Foresters at the New York State College of Forestry state that there are four million acres of woodlots on the farms in New York capable of producing vast quantities of fuel wood. Many farmers already obtain their own fuel from these forests and place considerable quantities on the market.

But in the event of high prices for coal, according to the forestry experts, a new demand for fire wood in rural communities, towns and villages of up-state cities would be developed.

A cord of hardwood is estimated to

contain about as many heating units as a ton of coal. Wood-fuel, however, is neither plentiful nor cheap, because none of the twelve million acres of forest land of New York, excepting a few infinitesimal parcels, is under a working forest management and never has been and is largely non-productive on that account.

Owners everywhere are able to obtain high prices for wood. Twelve to fourteen dollars a cord was paid for fuel wood last year. If twenty-five per cent of the forest land of New York was producing a maximum yield of timber as it would under proper forest management, and as they are doing in Europe, New York would have an available supply at reasonable prices to home consumers, sufficient in quantity to materially relieve any temporary coal shortage.



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**AMERICAN FORESTRY** will print, free of charge in this column, advertisements of foresters wanting positions, or of persons having employment to offer foresters. This privilege is also extended to foresters, lumbermen and woodmen who want positions, or to persons having employment to offer such foresters, lumbermen or woodmen.

### POSITIONS WANTED

**GRADUATE FORESTER**—Experienced; eight years state forest management, four years nursery, landscape and horticultural work, desires connection with firm or individual interested in forests or nurseries for commercial purposes. Address Box 4020, care **AMERICAN FORESTRY MAGAZINE**, Washington, D. C. (6-8-22)

**POSITION WANTED BY A TECHNICALLY TRAINED FORESTER** at present employed as forest manager on one of the biggest private estates in Pennsylvania; 35 years experience. Can furnish the best reference. Address Box 4030, **AMERICAN FORESTRY MAGAZINE**, Washington, D. C. (6-9-22)

**FORESTER**, University Graduate; 28 years of age; ex-service man; several years' experience in the paper industry as an executive, also sales experience, desires position. Best references. Address Box 4040, care **AMERICAN FORESTRY MAGAZINE**, Washington, D. C. (7-9-22)

**YOUNG MAN**, 32 years old; married; graduate of Cornell University; B. S., 1914; M. F., 1915, with five years' experience in the United States Forest Service. Desires position as forester with a lumber company or private estate. The best of references. Address Box 4050, care **AMERICAN FORESTRY MAGAZINE**, Washington, D. C. (7-9-22)

**FOREST ENGINEER**, a graduate with eight years experience as chief of timberland department of large Eastern paper manufacturing company is open for position with company operating Eastern spruce lands. Address Box 4055, care **AMERICAN FORESTRY MAGAZINE**, Washington, D. C. (8-10-22)

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**GRADUATE FORESTER**, with six years of both technical and practical experience in all phases of Forest work, is open to change of employment. Best of references can be furnished. Address Box 4075, care **AMERICAN FORESTRY MAGAZINE**, Washington, D. C.

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### BARNJUM \$5,000 AWARD

By the unanimous decision of the judges, Messrs. Gilbert, Howe, Piche and Wilson, the first prize of \$2,000 offered by Frank J. D. Barnjum for a practical suggestion for the suppression of the spruce bud worm, bark beetle and borer, was awarded to Mr. O. Schierbeck, Forest Engineer for Price Bros., & Co., Limited, Quebec, whose paper on the subject was the best effort of the 230 presented. The balance of the prize, namely \$3,000, was divided equally, or \$1,000 each to Doctors Swaine, Craighead and Tothill, of the Forest Insect Branch of the Entomological Department as a reward for the untiring efforts of a small band of loyal, conscientious, overworked and underpaid government officials, who are giving the best years of their life for the suppression of the forest insect peril in Canada, and from the fact that much of the information contained in papers presented was based on the results of their good work. As no one paper qualified fully for the prize, Mr. Barnjum, with the hearty approval of the judges, felt this would be a generous disposition of the prize money. Much valuable information on this important subject has been collected which will be given to the world free with full credit to the authors, who deserve and will be accorded the earnest appreciation of the people of the whole continent, which is so seriously menaced by these insect pests.

### PERPETUAL SUPPLY OF TIMBER

Progressive southern lumbermen, who are looking westward for future stands of timber as their own holdings become cut out, are showing great interest in the biggest offering of government timber ever made, says the Forest Service, United States Department of Agriculture.

The timber unit offered lies within the Malheur National Forest in Oregon and contains 890,000,000 feet of timber, 87 per cent of which is yellow pine. It is one of a group of logging units all tributary to Burns, Oregon, totaling 6,700,000,000 board feet. This forest region, government foresters say, will produce an annual cut of 60,000,000 feet for all time, thus insuring a continuous supply of raw material for the local lumber industries and steady employment for mills and woods workers. The opening up of the Malheur Forest presents an unusual chance for a new and permanent location for some company which is through in the South, say the foresters.

### FEDERAL FUNDS AID STATES IN FIRE FIGHTING

Allotments of \$400,000 of Federal funds to states cooperating with the government in protecting forest lands from fire have just been completed by the Forest Service, United States Department of Agriculture, according to District Forester George H. Cecil, of Portland.

This sum, together with not less than an equal amount to be supplied by the states cooperating, is expended jointly by the cooperating Federal and state foresters in protecting from fire forest lands at the headwaters of navigable streams. The allotment is made on a basis of timbered area and cost of adequate protection. The Federal expenditure in any state is restricted to not over \$24,000.

This amount of money is insufficient to insure adequate forest fire protection, according to Mr. Cecil, but it has in connection with state funds, enabled substantial progress to be made in that direction. Due to the serious fire season this year in both Oregon and Washington, this cooperative fund has been drawn on heavily, foresters say.

Allotments to the various states are as follows:

Oregon, \$24,000; Washington, \$24,000; California, \$22,750; Idaho, north, \$21,000; Idaho, south, \$2,300; Montana, \$13,725; Maine, \$24,000; New Hampshire, \$8,425; Vermont, \$4,200; Massachusetts, \$8,400; Rhode Island, \$625; Connecticut, \$3,150; New York, \$24,000; New Jersey, \$5,050; Pennsylvania, \$24,000; Maryland, \$3,850; Virginia, \$18,200; West Virginia, \$10,500; North Carolina, \$12,000; Tennessee, \$11,700; Louisiana, \$21,000; Texas, \$13,000; Ohio, \$1,050; Michigan, \$24,000; Wisconsin, \$15,000; Minnesota, \$24,000; South Dakota, \$100.

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703-705

# AMERICAN FORESTRY

THE MAGAZINE OF THE AMERICAN FORESTRY ASSOCIATION

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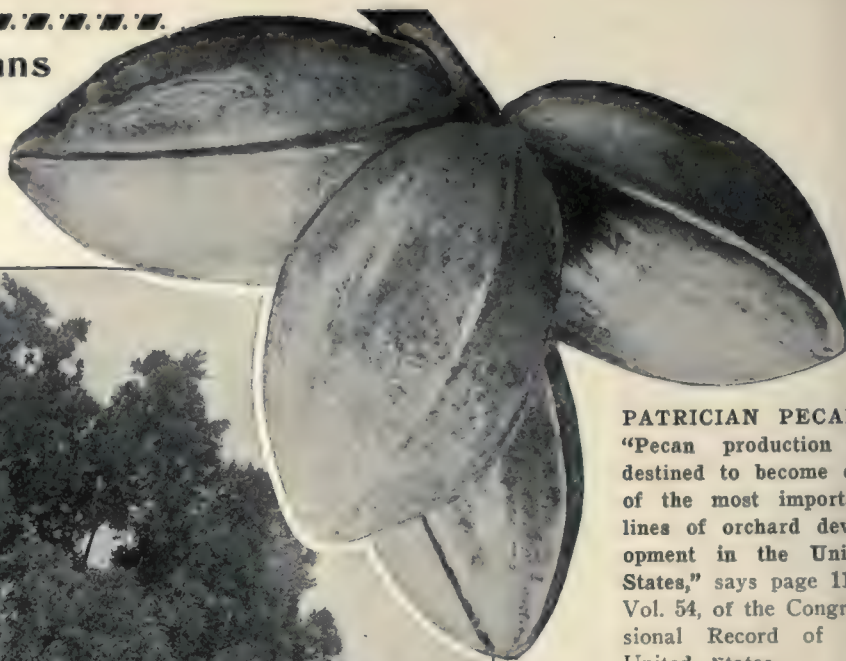
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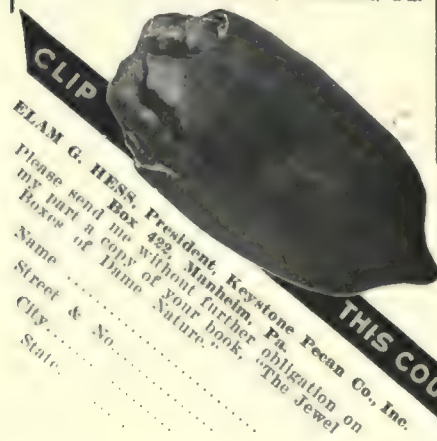
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## THE FIRE CALL OF THE NORTH WOODS

By William T. Cox

State Forester of Minnesota

**T**HERE is a tendency toward more fires in the woods. This is a fact which might as well be faced squarely.

Years ago, when the old growth of timber covered the north country, fires were rather infrequent. But even then great areas were occasionally laid waste. The Indians were careful with fires and few white men had taken up their residence between the St. Croix and the Canadian boundary. That was then a land of dense forest, of swamp and marsh, lakes and winding streams. It seldom became dangerously dry over large areas at the same time; and fires, when they did start, usually burned themselves out upon reaching moist ground.

For a number of years past conditions have been changing. The fire danger is increasing. This is due to a number of causes. First came the stripping off of the bulk of the virgin pine, often accompanied by

small fires which killed the remaining mixed timber and left it to blow down and constitute further fuel for accidental fires. The opening of the forest gave freer play to the winds to dry the uplands. Settlers then came in, not in compact settlements, but widely scattered through the forest district; and wherever a settler's clearing appeared the danger of fire came with it. Roads were constructed, and the traveling public became a factor in the starting of fires. Hunters, fishermen, campers, berrypickers, all played a part.

### "All Seasons, Fire Seasons"

There used to be two clearly defined fire seasons in Minnesota—spring and fall. The spring season came after the snow had gone and before fresh green vegetation had come out. The fall season occurred after frost had killed vegetation and the leaves had fallen. It lasted until snow came or until heavy rains had soaked the carpet of fallen leaves. Since the advent of dredges and ditch



THE FIRE FIEND'S PATH—COMPLETE RUIN AND DESOLATION LIE IN THE WAKE OF THE UNLEASHED FURY OF THE RED SCOURGE. DESPERATE EFFORT TO CHECK THIS NEEDLESS WASTE IS WHAT THE FIRE CALL FROM THE NORTH WOODS REALLY MEANS.



bonds, however, there is but one fire season lasting from early spring until late fall. The green timber in the summer may be fairly safe from fire, but the deeply drained swamps and muskegs will burn whenever ignited. Once afire, they will keep on burning unless thoroughly extinguished; here in an open area, there under a spruce or tamarack forest, now consuming only the mossy, surface peat, again perhaps under the ditch banks and not infrequently eating deeply into the over drained peat lands. Great burned holes and irregular shaped patches and winding caverns may replace what a week or two before was a splendid growth of timber or a huge meadow where a whole community cut hay.

#### No Rest For The Rangers

Only the men of the State Forest Service and the settlers affected, know in full what this long fire season means. The strain, the uncertainty, the worry, the frantic calls for help—hundreds and hundreds of them in the course of a season; and most disturbing of all, a knowledge and appreciation of the country from which these calls come, and the dread of what, under certain conditions, might really happen. We know how fires act, what they can do, what they have done. Recall the tragedies of Hinckley, of Chisholm, of Baudette and the more recent ones of Moose Lake and Cloquet.

No time is lost when fire calls come in. Sometimes they come in quick succession, from one place the re-

port of a grass fire sweeping toward a settlement, from another word that a peat fire is spreading over a large bog and threatening ruin to many farms. Still other messages tell of brush and woodland fires springing up in this township and that one, and over on Boulder Lake some cottages are in danger. Sometimes twenty calls reach a ranger's office in a single day. When the drouth is unbroken, evaporation high, the hygrometer shows low humidity and the weather report mentions wind, there is no rest, no sleep, for the ranger and his men.

Then, the fire plan for the district is a boon. The best emergency men are picked up and put in charge of the various fire crews so that the regular patrolmen can be used in a larger way on still other fires. From the plan also the best sources of equipment and supplies are ascertained. Rumors of the fires reach the press and newspapers begin calling up. Forest officers are trained to be conservative in their statements, but wild stories are almost sure to appear from some source. Then persons having relatives in the fire districts, or within fifty miles of the fires for that matter, become worried and begin wiring the Forester and the rangers. Tourists become alarmed and move out and a terrible suspense hangs over the whole state for fear a catastrophe is impending.

#### How Drainage Increased the Hazard

The greatest fire hazard of all came with the demand for drainage ditches. Starting in a small way a



THE BITTER, GRUELLING WORK OF TRENCHING AHEAD OF A FOREST FIRE IN THE NORTH WOODS IN THE BATTLE AGAINST AN ONCOMING FIRE. ONLY THE MEN OF THE STATE FOREST SERVICE, AND THE SETTLERS AFFECTED, KNOW WHAT THE STRAIN OF THE LONG FIRE SEASON REALLY MEANS.





UTTER DESTRUCTION—GREAT, GAPING HOLES BURNED IN THE LANDSCAPE REPLACE WHAT WAS, A WEEK OR TWO BEFORE, A BEAUTIFUL GROWTH OF FOREST. THE URGENT CALL TO PREVENT THIS REPEATED SACRIFICE MUST AND WILL BE HEARD IN THE GREAT NORTH WOODS COUNTRY.

number of swamps were drained which helped to make available hay lands in territory where hay was not overly abundant. Soon other ditch projects were promoted, and then speculators and companies became interested for they had large areas of cheap swamp lands to sell. The presence of a ditch, whether of use or not, near these lands would help to sell them. The contractor who made money on one ditch was anxious to get further contracts; and other persons seeing what looked like quick, easy money circulated petitions for still more ditches until there developed what might well be called a "drainage orgy." The craze has continued up to the present time, and many millions of dollars have been sunk in the ground. As a result, some counties have become almost bankrupt and heavy taxes are making it hard for the bona fide settler.

In some places drainage brought good results. In others, the good was balanced by harm done, and in still other large projects, apparently no good was accomplished—while millions of dollars worth of pulpwood and other timber were destroyed and township after township put in a most dangerous condition for fires.

#### The More People, the More Fires

Incoming settlers are from the prairies, or from hardwood districts, and do not know the peculiar danger incident to the use of fire in pine or other pitch bearing forests. The splendid new roads are bringing thousands of tourists into the lake and forest country—

and these visitors, ever so welcome, are at the same time an added danger to the woods for they drop burning cigarettes along peat road grades, and sometimes leave camp fires unextinguished. Taking all these factors into consideration it is probable that conditions favor the starting of four or five times as many fires as used to occur ten or fifteen years ago. Moreover, since the drainage of so many swamps, the distance a fire will travel if left alone to burn itself out, has been increased several times.

We are all familiar with the prompt response of the fire engines to a fire call in the city. Trained men and the best and most complete equipment, all maintained in the highest degree of efficiency, are demanded in a city fire department. Politics and inefficiency are not tolerated. Firemen are retained through long years of experience for human lives depend upon their work.

The city of Minneapolis, with a few square miles of territory, spends over a million dollars a year for fire protection. The state of Minnesota, with 34,000 square miles of forest hazard, appropriates but \$125,000 a year to protect hundreds of millions of dollars worth of standing timber, to preserve the lives and interests of its settlers, settlements, and the matchless scenic splendor of its lakes—the summer recreation ground of thousands of tourists.

As but few members of the legislature live in, or near, the wooded area, it is not surprising that at legislative sessions the needs of this district are not properly understood and therefore not properly provided with the neces-



sary appropriation for real protection. An appropriation of \$125,000 looks large to the average legislator; and it is,—but it is woefully inadequate when the area to be covered and the immense values at stake are carefully considered.

### A Battle To Save Human Lives

The great battle recently put up against forest fires has laid a heavy drain upon the Forestry Department's resources. Already they face exhaustion, with the year not yet one-third gone. But the battle could not be stopped. It was a choice between letting Northern Minnesota burn, or incurring these bills, and surely no one can conscientiously say that because we did not have sufficient available funds on hand that we should have refused to take proper steps to save not only property, but human lives. The memory of the terrible 1918 forest conflagrations is too fresh in our minds for even the most radical critics to take such a stand.

Thus the State Service finds itself at the end of its rope, financially. It will maintain the fight against fire as long as funds hold out, but it looks as though the first of the year will see us without money; and, through the forced discharge of needed men, with a sorry force left to face an ever-threatening situation. There being no additional available funds, relief will have to await until the legislature meets in January, when it is hoped that the present lamentable situation, financially, will be relieved by speedy special appropriations.

### The Fire Department of the Forest

The Forest Service with its rangers and patrolmen, paid from this limited fund, endeavors to maintain among the scattered settlements and villages and summer resorts and broad belts of wilderness, a fire department of the forest. It is in general the same protective system as is followed in Sweden, Germany and other forest countries. It is the only system that has ever worked in forest protection. The rangers and patrolmen have many duties in addition to fire prevention and control, but these other duties we shall pass over for the present. Thousands of fires, some along highways, some on the lake shores and many in remote parts of the forest have been fought and extinguished by rangers or under their direction. A

rather complete system of observation from lookout towers has been devised. (The air squadron of the National Guard is helping at the present time). Firebreaks have been constructed, slash disposal enforced, shelter cabins built, trails and portages cut out and other means of transportation developed. Rural fire brigades have been organized, fire fighting equipment obtained, improved and in some cases originated.

Much educational work has been done among settlers, the majority of whom no longer look upon a running fire as beneficial, but view it in its true light as a danger, a menace, the most terrible curse of the north country. The railroads have been induced to organize little forest services of their own under state supervision. Co-operative

fire protection is obtained from the lumber companies and mining companies. Many townships and some counties have been persuaded to vote money to assist in fire control. What is of special importance an exceedingly competent force of men has been trained. Many convictions for violations of the forest laws are obtained each year. All in all a thorough system of fire protection has been worked out. What it needs to make it more effective is more means.

### The Unheralded, Efficient Ranger

Forest rangers go after any fire that starts, no matter whether it is a smouldering patch of peat only a yard across or a wide belt of flame sweeping the forest and threatening whole communities in its path. Even the worst fire can be fought with some degree of success;

if not in front at least at the edges to "narrow it in" or keep it from spreading wider. Sometimes the rangers do heroic things, acts which in the army would bring decorations. But the rangers, patrolmen and other forest officers are quite content modestly to perform their sometimes hazardous duties in saving life and property away back in the woods, on the edge of the wilderness.

Many persons are of the opinion that forest fires are caused by some single agency, such as the railroads, logging operators, fishermen, tourists or settlers burning brush. While as a matter of fact, all of these are responsible—no one stands out as pre-eminently guilty. While the causes of forest fires vary somewhat from year to year, it has been found in Minnesota that about



A BIT OF THE OLD NORTH WOODS WHICH LUMBERING AND FIRE HAVE NOT REACHED.



thirty per cent of the fires are started by the railroads, twenty per cent by campers, tourists, fishermen and berry pickers, forty per cent by smokers, settlers and slash burners and ten per cent by miscellaneous agencies.

Every year, hundreds and in some years thousands of fires spring up in Northern Minnesota from these causes and the fire call of the north woods goes out to the rest of the state. But it is the rangers and their fire-fighting organization which tells in the ensuing battles. During the two months' battle last summer, the forest service organization unaided extinguished 710 fires, the forest rangers aided by the National Guard, 30 fires, lumber company patrols and crew working under the direction of forest rangers, 50 fires and the National Guard unaided, 8 fires. It was a bad season. Newspaper reports notwithstanding, the forest rangers were able to save all villages and all but six settler's homes. Several thousand tons of hay, stacked in meadows were burned and the loss in standing timber, young and old, approximated a million to a million and a half dollars. Two hundred and fifty-two thousand acres are estimated to have been burned over, as follows:

	Acres
St. Louis, Lake and Carleton Counties.	92,000
Aitkin County .....	20,000
Cass, Crow Wing, Morrison and Mille Lacs Counties .....	35,000
Red Lake District .....	70,000
Koochiching County .....	15,000
Mahnomen and Clearwater Counties..	20,000
<b>Total.....</b>	<b>252,000</b>

This is classified as follows:

Woodland and timber.....	42,000 acres
Brush and cut over land.....	42,000 "
Open dry bog and grass land....	168,000 "

#### Meeting the Fire Call

How is the yearly fire call from the north country to be met most effectually? Many and interesting are the suggestions made for doing away with the fire danger. Most of the measures proposed have been in effect for years, indicating that the parties making the suggestions have not been in touch with the work of the Forest Service. Some are unique, others simply preposterous. One man proposed to construct a series of firebreaks a quarter of a mile wide at intervals of every six miles, not realizing that this would require an initial expenditure of

over one hundred million dollars to say nothing of the cost of keeping clear thereafter, or of the fact that such firebreaks would in nowise lessen the need for an efficient patrol force. Another idea frequently put forward is to clear a strip a mile wide around each village absolutely clean of combustible material. This might be rather effective, but it would be cheaper in most cases to move the villages. In other words, such an undertaking would be far beyond the means of the average village in the forest country. An asbestos screen has been proposed, which might be shifted like a drift fence and from which back-fires might be set!

The turning over of fire control work to the commissioners of the various counties, to the National Guard or to a state constabulary, as well as other impracticable suggestions have been made by persons, no doubt in good faith, but with little if any knowledge of the complex problem that can be handled only by a highly trained and experienced force of real woodsmen. The training of a man for a city fire department requires much less time than to prepare one for fire work in the forest.

There is only one way to prevent and control fires in the woods. That way has proved highly effective as far as means were provided to make it so. An adequate force of forest rangers and patrolmen selected and directed by a trained forester, free from political influence, provided with proper equipment and actuated by a desire to preserve the forest with all its human habitations, its industries and its wild life is the answer.

An appropriation of \$415,000 for the fiscal year 1923 is needed. This to employ a suitable force of men and to purchase necessary equipment. With the present appropriation of \$125,000 the State has been able to obtain from co-operative agencies \$300,000 more for fire control work. It is believed that by increasing the State appropriation the co-operative agencies can be induced to do still more.

The Legislature will be asked to provide for control of the water level in existing ditches and to regulate the construction of ditches in new drainage projects, giving forestry as well as agriculture a voice in their approval.

An amendment will be asked to the burning permit law, further restricting the issuance of permits.

The educational campaign in forestry, and particularly in fire prevention, needs to be intensified and measures are contemplated with this object in view.

**Man-Caused Fires Are Preventable**  
**DO YOUR PART**



# THE TRAIL AHEAD--HOW TO PUT FORESTRY

By C. L. Harrington, Commissioner,



VIRGIN PINE ON STATE LAND AT TROUT LAKE, WISCONSIN. THIS TIMBER IS WORTH \$600 AN ACRE ON THE STUMP.



IN THE NINETIES THE STATE OF WISCONSIN SOLD 32,000 ACRES OF ITS BEST PINE LAND, WITH TIMBER, FOR LESS THAN \$10 AN ACRE. A FEW YEARS LATER THE TIMBER HAD BEEN CUT AND THE LAND LOOKED LIKE THIS.

TO understand the trail head in Wisconsin forestry, one must have some knowledge of the trail behind. Forestry is not a new thing in this state. As early as 1867 a special commission was appointed under legislative direction to inquire into the effects of forest destruction on the watersheds of the streams of the state, and also on the effects of forest fires. This commission looked into these matters and left their impressions in a very interesting report,—interesting especially from present day development. Again in 1898 a report was made on Wisconsin forest resources and problems. Not until 1903, however, was there any materially important legislation for forest protection enacted, but in that year the State Board of Forestry was established and the first real efforts made to outline a forest policy.

## Supreme Court's Fatal Decision

From that time on until about 1913 a rather ambitious program was carried on, which included the purchase of lands for forest reserves, the establishment of a fire protective system, the construction of ranger stations, lookouts, trails, roads, nurseries, and the customary work of developing a forest property. In

1913, however, largely out of a series of misunderstandings and perhaps out of a too ambitious program on the part of the Forestry Board, difficulties began to arise and a very active opposition to the forestry plan arose. The whole matter was precipitated in an action before the Supreme Court, and in its opinion, handed



# IN WISCONSIN ON A SOUND BASIS

## Wisconsin Conservation Commission

down in 1915, among other items of the greatest importance to the forestry cause, the court declared that forestry as carried on by the state was a work of internal improvement, and as the state constitution prohibited such works it likewise prohibited forestry practices by the state.

It should be remembered in this connection that in 1910 the State Constitution had been amended so as to authorize a state forest program, but in a review of this amendment the court declared that it had not been adopted legally and was consequently null and void. In this same decision declaration was made that the lands which had been purchased for forest reserve purposes could not be used primarily for such purposes, but on account of the fact that they had become confused with certain classes of government grant school lands they all had "the cast of school lands," and were to be administered accordingly. Suffice it to say that there seemed little left of the forestry program which had been started about 1903 after the matter had been thrashed out before the Supreme Court.

At least 80% of the soil of Wisconsin is suitable for agricultural development. The southern portion of the State comprising about 15,000,000 acres, is a rich farming region, practically stationery as to cultivated areas

from year to year. Northern Wisconsin, which embraces 20,000,000 acres, is undergoing the development of its agricultural lands. It has good roads, is well provided with railroad facilities, and is completely organized into town and county governmental units. There is no reason to believe that these northern counties will not follow, in



IN 1912 THE STATE BEGAN REFORESTING SOME OF ITS CUT-OVER LAND AROUND TROUT LAKE. THIS PICTURE WAS TAKEN IN 1916, FOUR YEARS AFTER PLANTING.



AND THIS, TAKEN IN 1922, TEN YEARS AFTER PLANTING, SHOWS THE TRANSFORMATION FROM PINE BARRENS TO PINE FOREST COMPLETE.



the main, the same course of development as experienced by the Southern Wisconsin counties, which will make them in the near future a region primarily agricultural, but with a diversity of industrial and recreational activities as well, for the opportunities furnished by the myriad of small lakes all through this region, the waterpower, facilities for shipping, etc., will be taken advantage of in an increasing way as the years go by.

### Pine That Ran Many Mills

However, all the soil in the state is not of the highest agricultural value. There are areas of sandy land of considerable extent that are not enjoying the positive progress that is so noticeable on the heavier lands. In fact, many evidences are at hand that on sandy jack pine plains an actual retrogression has taken place. Yet these same areas had once a stand of pine that ran many mills for many years, and their output of forest products now, dwindling as it is, still assists in turning the wheels of Wisconsin industries and provides bread and butter and some luxuries for Wisconsin citizens. And again, as we pass through our northern counties, we note areas that are rough and broken or stony, or lowlands along rivers. These areas, aggregating hundreds of thousands of acres, should also be devoted to producing timber for the state.

There is an especial need for forestry in the development of Wisconsin. One can visualize the future development of the state as he thinks of the soils, the lakes, the rivers, the topography, the rocks and minerals, transportation, and all other factors that go to form an economic whole. He sees Wisconsin primarily a land of fertile farms, with woodlands of varying sizes, producing the hardwoods for the state as a part of these farms; he sees the large areas of poorer soils managed as forest lands, and producing the softwoods needed by all farms and industries, and also serving as great areas for the protection of all forms of wild life and for recreational purposes; he sees towns and cities surrounding mills and factories; he sees the mineral resources, the water powers, the recreational advantages developed; he sees the whole industrial, commercial and agricultural plan connected up with good road, railroad and water transportation, and at the door the great markets of the Middle West, and all the world for that matter, with the inevitable advent of the deep waterways project.

One of the first steps necessary to the permanent progress of forestry in Wisconsin, is to amend the State Constitution so that forestry as carried on by the state may have legal recognition. This action is now pending. A new constitutional amendment has been considered favorably by the last Legislature. It must be again submitted to the next Legislature, and then to a popular referendum. The sentiment on the part of Wisconsin citizens should carry this amendment through to a successful conclusion.

The trail ahead also shows us the vital need for

fire protection, particularly on those soils of low fertility upon which the bulk of our softwood supplies will eventually be grown. This part of the program is also under way and, thanks to the Weeks Law, we have been able to make considerable progress. On the heavier lands, where active settlement progresses, the need for intensive fire protection is not so pronounced. The northern counties have a diminishing forest fire risk, as that region becomes broken up by cleared fields, roads and general settlement, but on the sandy plains where, comparatively, no settlement is occurring, the risk from fires is still pronounced. On these sandy jack and Norway pine plains, with early drying out in hot weather, a heavy ground cover of sweet fern and small plants, fires spring up most rapidly and burn most fiercely, and consequently added protection for them is most urgently needed.

We also see the need on the trail ahead of bringing the present state lands, which were purchased specifically for forest reserve purposes, out from under "the cast of school lands," in order that they may be managed entirely as state forests, game refuges, and recreational property.

### Where the Farmer Needs Help

On the trail ahead we may also discern the farmer as the chief owner of forest producing land in the state. His holdings are in small lots. Each farm has some wood land. He is saying that the state furnishes experts for bees, tobacco, cranberries, and every other farm crop, to instruct as to correct and up-to-the-minute cultural and marketing practices, but as for his timberland, which in the aggregate composes a greater acreage than any cultivated crop, but little is done. We see that there is a distinct need for more activity in informing the farmer, as the greatest owner of forest producing land, present and future, that the state possesses, as to the fundamentals of woodlot management and the measuring and marketing of woodlot products.

On the trail ahead are growing many millions of young trees, indicating that the state especially can well afford to become interested in stimulating the culture of desirable native forest trees on private estates, along the highways, and on the land owned by the state itself. This work is also under way and bids fair to fit in very effectively with efforts to simulate the farmer to plant and protect forest trees for his own personal gain, and incidentally for the good of the community.

Persistent educational efforts, legal recognition of forestry as a legitimate state activity, the disentanglement of the state land problem, carrying a knowledge of timberland management to the farmer, and the stimulation of tree culture on the part of land owning citizens, so that barren highways, estates, lake and river shores, etc., may be planted up, will gradually but inevitably put forestry and forest replacement on a sound and adequate basis in Wisconsin.



# THE PICTURE THAT WALKED

A STORY OF A MICHIGAN LUMBER TOWN THAT WENT DEAD AND WHAT HAPPENED WHEN  
RUBE POTTLE GOT A VISION

By Harold Titus

Author of "Timber"

WHEN the Company finished its cut, junked the saw-mill and pulled out for the southern pineries, Blueberry, Michigan, went completely to pot.

No one had foreseen this calamity—unless it was Rube Pottle. No one had had any definite idea that the timber would ever be exhausted and Michigan timber towns left stranded by the receding economic tide—unless it was Rube Pottle. Every man who had established a business in the community had done exceedingly well. Small capital started an enterprise; the boys were good spenders; high profits ruled; the picking was good . . . until the last feather came off and left the business bird as bare as the once timbered hills which the Company had stripped.

No one had saved a great deal, either. They were mostly young men, with the improvidence of the pioneer

Of course, the scavengers were left. Cedar camps were established in the swamps; a shingle mill ran the year around down by the big sawdust pile; some Norway and sap pine remained; here and there tar paper farm houses and wire fences appeared in the back country and hopeful young farmers or hopeless old ones came to town to do their meager trading. It kept the breath of life in Blueberry. That was all.

"Where there's life there's hope," growled Art Bisbee, the clothing man as the boys sat in front of the station waiting for Number Nine one May evening.

"And where there's danged little life there's danged little hope," said Mel Corbin, the shoe man.

"Movin' any land, Rube?" asked McIntyre, the hardware dealer.

They looked at Pottle who sat on the baggage truck,



"HE HAD BEEN WATCHING OTHER TOWNS THAT HAD HAD THE PROPS KNOCKED OUT FROM UNDER THEM."

generally characteristic. They had staked their all in Blueberry, encumbered themselves with families and taken root in the community. And then when the big burner went cold and the carriage stopped and the mill fell silent there was something funereal in the air and in the hearts of those men.

Blueberry had boasted four thousand people once. A year after the mill shut down its population was cut in half; in two more, abandoned houses were commencing to warp and sag, just as the spirit of those who had been forced to hang on for lack of means to get out, was warping and sagging. Half the stores on Main street were empty of stocks and the rest were empty of customers too much of the time to keep alarming quantities of red ink out of the various ledger balances.

squinting off at a red glow in the night where smoke had been rising for a day or two.

"Two forties on twenty-seven last week," said Rube. "It ain't so bad. Them dudes that fished here 're comin' back in June, an' say they'll bring a big bunch with 'em. . . . That fire, now, she'd ought to be put out."

Corbin raised his eyes toward the soft glow.

"Let her burn," he mumbled. "Makes it easier to clear. Farmers, not dudes, is what this town needs."

Now, Rube Pottle, who had run the boarding house, was the last real representative of the Company left in Blueberry. He still ran the boarding house, but was designated as Land Agent and his real job was to take the prospective settlers, who were sent in by a colonization company, and sell off the cut-over land to them. It





"THE FACT THAT EVERY INSOLVENT SETTLER WAS A LIABILITY DID NOT ENTER INTO THEIR CONSIDERATION."

was on his activities that the low hopes of the little group of stranded men were hinged and Rube had become peculiarly unsatisfactory in his actions. He started out on his new job with all the old vigor he had had when Blueberry was a good town, but somehow he was losing his push. He failed to enthuse now over land sales as he had in the beginning. He spent a lot of time with the stray dudes who came to stay at the boarding house and fish the Blueberry or shoot partridges or try for some of the few deer left in the valley. He dealt in fur in the winter time. He seemed to be worried whenever a slash fire ran over the country, even when no settler's buildings were in danger.

Another two years, and it was five since the mill fell silent. Rube had sold a good many forties those first three years; in the fourth he sold fewer, in the fifth, scarcely any at all. It made the boys uneasy. Things were getting no better in a hurry. Hoskins, the grocer, had accounts that ran into thousands on his books from these new settlers and instead of blaming it on the early September frost of this year or the five rainless weeks of the summer before, he somehow blamed it on Rube.

So, with Bisbee and Corbin and McIntyre. They could do a lot of agreeing in an evening by a stove, those four. If Rube would only get busy and sell more forties and bring in more families there would be a better chance of making a go of the town, they argued. The fact that every insolvent settler was a liability did not enter their consideration.

One night they framed a letter to the Company, complaining about Rube, who was then off somewhere with a few men and a team or two

fighting a slash fire that was simply clearing the land. And that spring, instead of staying on the job, he had been roaming around over the state looking at other sections, watching other lumber towns that had had the props knocked from under them. He had been caught reading books about fishing and hunting, too, when he should have been hustling.

"He'll probably be buying one of these here new gas wagons pretty soon, so's he can travel more," opined Mel.

They made the letter pretty strong, trying to convince the Company that it owed the region something and them something and itself something. Back came a three-line letter referring them to R. Pottle, their Land Agent, and stating that they were forwarding the complaint to Mr. Pottle.

Of course, the boys didn't feel quite right about that. Rube was one of them, even if he was getting queer. They didn't want to hurt him, they decided. But the next morning when they saw him spend two hours getting a party of six fishermen established and on their way up the stream for the day while three prospective settlers—one of them with his family, too—hung around, the boys didn't feel quite so guilty over that letter. . . .

A week went on and Rube never batted an eye, but one night when the four, along with Hogan, the blacksmith, and the station agent were gathered in Bisbee's clothing store, Pottle came in.

"'Lo, Rube."

"'Lo, boys."

"Drivin' dudes today?"



"A DEADLY LAND WITH LITTLE WILD LIFE AND NO BEAUTY."



"Yup. Fishin's fallin' off."

"Darned river's fished to death."

Rube took a chew and nodded. He thought a moment.

"Ye-s, she's fished hard; fished to death. . . . Mind that branch of Killdog back in the elm stretch where we used to catch them big ones? Huh? By darn, if a fire didn't run through there last fall and lick up everything clean: Makes it good fishin' . . . fine fishin'; them fly fishermen never gets hung up. . . . Only, they ain't any fish left in it, not to amount to anything. . . ."

Everybody was bored. Here was Rube, the offender, and they wanted to talk settlers to him and he was only interested in fish and fire and tourists.

And then he popped this at them:

"Got a letter from th' Company today." The mood of the group tensed. "Yup, a real, long letter, th' one I've been expectin' for a year an' more. They're goin' to stop sellin' this cut-over land to settlers."

An instant of terrible silence.

him, an' he sure was that! I watched him a long time an' I'm goin' to practice on you with what I learnt. . . . Now up here, you see,"—gesturing to the emptiness before him—"I got a easel an' a frame with cloth on it on the easel. Back here's my paint pots; in this hand's the dingus with paint smeared onto it, an' in this hand I hold my brush. Now watch . . ."

Of course, all the boys thought Rube had gone dotty. For days after that imaginary picture painting they would laugh at the absurdity of the thing despite the hopelessness which was in the heart of each man. Old Rube had gone off the handle, for sure! Painting pictures! And that kind! When everybody knew that towns like Blueberry lived on two things: forests and farms. The forests were gone, the farms didn't amount to much, but Rube had talked the Company into giving up any attempt to *make* them amount to enough to support the town. And when they had tried to talk back to him and show him where he was wrong, he had said:



"THE TOWN HAD CHANGED. SOMEBODY BOUGHT A TUMBLED DOWN HOUSE. A STRANGER CAME IN AND OPENED AN ICE-CREAM PARLOR RIGHT UNDER THE HOME BOYS' NOSES."

"Stop?" exploded Mel Corbin.

Rube nodded. "Stop. It's worse'n sellin' poisoned candy to kids, boys. The land growed pine and she won't grow another darned thing! She dries out in summer, she frosts late in spring an' early in fall. God didn't mean it to be farmed."

Consternation; discussion.

A moan finally escaped McIntyre. "That finishes Blueberry," he said and rose.

Rube was whittling on a sliver, then, and he hadn't appeared to hear all the hard things that were said about the Company and the innuendoes against him until Bisbee rose abruptly and started home. Then Pottle spoke.

"Oh, Art!"

"Well, what now?"—irritably.

"Don't rush off. I got somethin' to show you boys." He folded his knife and rose, hitching up his pants. "Once, when I was in Saginaw, I seen a fella in a store window paintin' pictures. Lightnin' artist, they called

"Look at your bills payable and see how the settlers are makin' it. Look at yourselves and see what chance you've got to move. You're sunk, every one of you. I'm sunk, too. Blueberry's sunk . . . sunker than sunk! . . . Then look at my picture!" He had waved his arm at the imaginary easel before him and laughed.

Well, Rube had been right about the land. It wouldn't work up into farms. One by one the settlers pulled out, leaving bills and hopes behind. A big outfit leased grazing rights for five years. One year their sheep and cattle did very well . . . for a few weeks. At the end of five years they had sold off the stock and turned the ranch buildings into a private fishing and hunting club . . .

The buildings in Blueberry began to tumble down. The cedar was gone, by then. The stores were smaller and dingier and less prosperous. Of course, the hardware store was keeping alive by its stock of tackle



and ammunition; Bisbee did a little business with the tourists in sports clothing; the blacksmith shop had become a garage, but the roads were bad. . . .

But every now and then Rube Pottle, a little thinner, a trifle grayer, would pop in on one of his erstwhile cronies to put a little touch of paint on the picture, as he called it. They were too disgusted to chase him off, in the beginning; after a while it was sort of funny, watching his predictions go wrong. . . . Of course, now and then he was right. About the automobiles, for instance.

"But you'll never make it a resort town," McIntyre argued doggedly. "They'll go up the lake shore where it's cool; they want this-here golf and tennis and fine hotels."

"Sure," agreed Rube. "But here's th' Blueberry, an' there's the swamps. . . . By th' way, th' Company's hired a fella who knows a lot about trees. Forester, they call him."

Mac simply grunted and stared into the street and wished that he could get out of Blueberry. Ten years, of just running behind! But he couldn't get out.

"Forester," repeated Rube. "Little more green, Mac!" And he made a gesture, as if wielding a brush.

Indeed, a little more green. Down the line, out of the Company holdings, the country had become barren, its young growth was cut down annually by fire, its stream lay sluggish or rushing and roiled as bald ridges shed their rain; a deadly land with little wild life and no beauty. But up here . . . for a dozen miles each way along the main line, Old Rube had kept her green. Nobody paid much attention to him. He had had himself appointed fire warden and used to spend some Company money for equipment and men and once they heard that he had even hired some boys to sit in tall trees and watch for smoke. . . . Foolishness, of course. Still, she was getting green. . . . That second growth pine was coming along. . . .

Oh, yes; about that road. First it was just a grade; then gravel and with the gravel more automobiles came, stringing along from May until snow. It made the garage a busy place. It made Old Rube tear down the boarding house and put up a new place, the Blueberry Inn. Crazy Old Rube built her of logs and stained shingles and to make it modern and up-to-date like city folks were used to, he heated the downstairs with fire places and made the dining-room look like a cook shanty. . . .

Now, why did they come? They came because the Blueberry drawing life now from a forested instead of a fire-swept land, offered what they wanted. It stayed cold, it kept an even flow and made a happy home for trout; the feeders ran back into green swamps where fire had not ravaged; it kept itself stocked because so many of

those feeders were unfishable. Those tourists came for the fishing. And they put up grouse that had refuge in good cover as they went in and out of the stream, and the grouse—growing fewer in other, burned-over parts—called them back in October. They saw deer now and then, and the deer held them over until November. Three years after the Blueberry Inn was built, Rube



Photograph by the State Forester.  
THE TOURISTS CAME NOW BECAUSE THE BLUEBERRY, WITH FORESTED SHORES, OFFERED WHAT THEY WANTED.

had to put on two more wings and widened the cook shanty so he could seat thirty more people at a meal. The natural play grounds of the people in other parts of the state were burning up, settling up. Blueberry, green and filled with life, was unique, indeed!

Other things happened. Everybody didn't stay at the Inn. They camped. They bought lodge sites and put up cabins, and one day Rube ambled through Main street adding another dab to his picture. He'd sold a piece of land to a farmer. Yes, sir! That Dark Creek bottom. "Good soil, there," said Rube. "Berries and milk and vegetables for the dudes!" In three years after that first little truck farm was established a dozen were scattered along the creek bottoms where spots of good soil showed. They had a market at hand for their specialties, and the



sons of the men who bought that low land stayed home in summer to help the old folks and stuck around in winter because the price of fur had gone away up and because the unburned swamps along the river were getting full of rats and mink and foxes.

The town had changed. Somebody bought a tumble-down house and made a summer cottage of it. Others followed. A stranger came in and opened an ice cream store right under the home boys' noses; another started a bakery. McIntyre's oldest boy went into the curio business and spent his winters rounding up squaws who had not forgotten their tribal arts. His place was a corker, the tourists said. The clothing store put in a big-town front. McIntyre was making more money out of tackle and ammunition than he ever had out of hardware. The grocery stocks—Haskins had lots of competition by then—were filled with unheard-of stuff. There was a movie house and two doctors and a dentist and a book-store. . . . Well, Blueberry was a better town than it ever had been.

Only now and then did it go dead. Absolutely, positively dead. That was when the big bell over the fire house rang and the speed truck with its equipment ran out. Then store doors slammed and Fords trailed the truck out of town, into the cut-overs, and the banker—sure, there was a bank—and doctors and merchants sweat and swore and worked until the menace was destroyed. Why shouldn't they? Their town was built on forest fire prevention.

Rube Pottle was an old man. Twenty-five years since the Company pulled out. Twenty years since he painted his picture. He carried a cane, then, because of those hard days fighting slash fire alone, likely. A gold-headed cane, given to him by the Company, along with a lot of other things. He came out of the Company's building—the three-story, brick one on the corner. He had just been talking with the Company's chief forester. He walked three blocks past comfortable residences and thrifty stores. He stopped and looked down the hill to the river. There stood the shell of a mill, weather-beaten. Some men were working on it. He smiled and lifted his old eyes to the hills. They were blue-green that morning . . . oh, so green! the pine crowns waved gently in the autumn breeze.

He went into Bisbee's, where Art's oldest boy was running the business and found Art.

"'Lo, Rube."

"Mornin', Art." Pause. Rube scratched his chin. "Jest come in to put on a little more paint." Art was puzzled. He had not heard that phrase for years; then he remembered and grinned. "Yup, paint," went on Rube. "Th' Company's comin' back."

"Back! Rube, you're crazy!"

"So's been said before, several times. But they'll open their camps this winter. They're rebuildin' th' mill now. They're goin' to start thinnin' their pine out, Art. Pulp, excelsior, lath, mebbly some little box lumber. . . . They'll start her this fall an' she'll go on forever. . . . Least, that's what th' forester tells me. . . ."

Art scratched his head and grinned again.

"By gosh!" he said, under his breath. "By gosh! Company comin' back to operate! We got the best town in the state to live in! We got our own kind of farms; we got jobs for the boys in winter; we got a bigger average population than we had in the old days; we got more money 'n we ever had; business is always good because that tourist crop *never* fails. . . . By gosh, Rube, that darn-fool picture you painted that night outa nothin' just naturally stepped right out of her frame and walked!"

### THE ROTHROCK MEMORIAL

In the November issue, AMERICAN FORESTRY published a notice of the movement looking to the placing of a bronze Memorial Tablet in the Department of Forestry in the Pennsylvania State Capitol Building at Harrisburg, commemorating the services of Dr. Joseph Trimble Rothrock, who so faithfully and efficiently served and promoted the forestry interests of our country throughout his lifetime. The project is in the hands of a Committee composed of representatives of the State Forestry Department of Pennsylvania,—Dr. H. S. Drinker, Major R. Y. Stuart, Colonel H. W. Shoemaker, Mr. George W. Wirt, and Prof. Joseph S. Illick.

Friends and admirers of Dr. Rothrock, who desire to aid in the erection of this memorial, which it is estimated will cost \$1,500.00, should mail their contributions to Dr. H. S. Drinker, Chairman of Committee, Merion, Montgomery County, Pennsylvania. The following is the proposed tablet inscription, which is to be headed by a medallion portrait of Dr. Rothrock to be modelled by the eminent sculptor, Dr. Robert Tait McKenzie, of the University of Pennsylvania.

#### To JOSEPH TRIMBLE ROTHROCK

Born April 9, 1839; Died June 2, 1922.

Patriot, Soldier, Pioneer, Forester, Botanist, Sportsman, Physician, Educator, Author, Public Servant, Distinguished Citizen, Loving Husband and Father.

The Father of Forestry in Pennsylvania

First Commissioner of Forestry of Pennsylvania  
Active and Devoted Member of the Pennsylvania  
State Forest Commission from 1893 until his death

M. D., University of Pennsylvania, 1867  
Professor of Botany at Pennsylvania State College  
and later at the University of Pennsylvania

A leader in the Conservation of our Forests and  
Streams

One of the Founders and a life-long Member and  
Officer of the Pennsylvania Forestry Association  
Vice President of the American Forestry Association  
Honorary Member of the Society of American  
Foresters

Founder and Promoter of the State Forest Academy  
and of the Mont Alto Sanatorium

In his life he exemplified the typical traits and virtues of American manhood, and in his death he left us the memory and example of one who embodied in his character and life, "Whatsoever things are true, whatsoever things are honest, whatsoever things are just, whatsoever things are pure, whatsoever things are lovely, whatsoever things are of good report."

From His Friends





BEFORE THE OPPORTUNITY IS GONE FOREVER, PUBLIC SPIRITED CITIZENS OF WISCONSIN ARE WORKING TO SAVE A SPACIOUS CORNER OF THE STATE, THE FINEST OF ITS NATURAL PLAYGROUNDS AND WHERE THE OLD WISCONSIN MAY STILL BE SEEN AND ENJOYED BY THE SONS AND DAUGHTERS OF THE NEW. THIS IS ONE OF THE MANY BEAUTY SPOTS IN THE PROPOSED NORTHERN LAKES PARK.



# A BIT OF OLD WISCONSIN

By Åsa K. Owen

President, Wisconsin Lakes and Parks Association

**H**ARD driven, in the distracting haste of modern development, we easily forget. We scarce can realize that, within the span of lives as yet unended, there spread across our Northern States, for near a thousand miles, a great, unbroken forest, one of the wonders of the world. Nowhere, through all this vast expanse, stood timber more majestic, or of finer quality, than that within the borders of Wisconsin.

The writer, not yet old, has talked with men who helped to blaze the early trails, avenues of our present commerce. Before them, our lakes and rivers were the pathways of the fur trade, of the Indian and the voyageur, our woodlands trodden only by the hunter and the trapper. Behind them came the lumbermen, imagining the supply would never end, slashing, burning and wasting, taking only the choicest, in competition on a glutted market, a market which meant, in fairness, not alone added employment, but cheap materials for the building of the then new West.

And the wonderful forests of old Wisconsin, like those of other states, went down before the needs of the people, and are today well nigh exhausted. Only a few scattered tracts, of comparatively meager extent, haunted by a harried wild life, now remain, and these last remnants unless something be done to stay, in

part, their destruction will, within a few more years, likewise have gone the way of the ax and gun.

That is why, beginning a little less than two years ago, a movement has been growing here in Wisconsin, as similar movements have grown in New York, Minnesota, South Dakota, California and other states, and in connection with the setting aside of our national parks, to save, intact, for ourselves and our children, some distinctive bits of our unspoiled best, to typify the land that was.

Of recent years, about most of our surviving beauty spots, the more alert and fortunate have built their summer homes, and erected, almost too frequently, at each approach, the warning, "Private Grounds—Keep Out." And so we are working to secure, first and foremost, before the opportunity be forever gone, one spacious corner of the State, the finest of our natural playgrounds, where creatures of the wild may still find sanctuary, where the old Wisconsin may still be seen and enjoyed by the sons and daughters of the new, and where the lame, and the halt, and all but the blind, may read, throughout the years to come, the welcome, "Public Preserve—Come In."

This, in a few words, is the meaning of the campaign, which has attracted wide attention, to save the



DOWN THROUGH ONE SIDE OF THE NORTHERN LAKES PARK AREA WINDS THE HISTORIC FLAMBEAU, WHICH OPENED A NEW VISION TO THE EARLY EXPLORERS AND WHICH HAS CARRIED ON ITS BROAD BOSOM IN YEARS GONE BY UNTOLD MILLIONS OF WHITE PINE LOGS. IN THE FALL OF THE YEAR ITS FLAMING WALLS OF GOLD AND CRIMSON SUGGEST THE ORIGIN OF ITS NAME.





STRUNG ALONG THE SHIFTING BED OF A GREAT PRE-GLACIAL RIVER AND SEPARATED HERE AND THERE BY ROLLING MORAINES LIES A CHAIN OF SPRING-FED LAKES, FOURTEEN IN ALL, EACH A GEM IN ITS OWN-RIGHT. TRAILS, MANY OF THEM FIRST WORN BY THE RED MEN, RISE AND DIP AND WIND IN ALL DIRECTIONS.

forested lake and river region, situated in central upper Wisconsin, and known as the Northern Lakes Park.

Of the details of that work it is not yet time to tell. It is a pioneer movement in our State, the entering wedge for better things to come. Once become the property of the State and opened up for use, the multitudes who pleasure there, healing the wounds of city strain and farm, will be quickened in their love for the forests—the real forests which the great majority have never seen—and, learning what forests mean to us, will be tightened in the determination that Wisconsin shall no longer lag behind her sisters to the east and west in tackling the forest renewal problem, and, knowing that the job should and must be done, in doing it well.

To date forestry in Wisconsin has been marking time. It took the automobile, and the highways it opened and improved, to bring to us from the lower states a first appreciation of the value of our timbered shore lines. With thousands of lakes, whose frontage exceeds in total mileage our Atlantic and Pacific seaboard, we, of the Lake States, are awakening to the future, as well as present, value of our northland as the playground for half a nation. A realization of the occasional need of escape from the growing stress of modern life, to the health giving freedom and recreation of the open, is unlocking the door, where the eye for the profits of the moment had left it closed, showing us the way to an annual, permanent return, entirely legitimate and to the larger profit of all concerned.

And in this natural park this unmarred bit of the north our fathers won, where age-old trees rank all horizons and



peaceful waters gleam and glisten, we have a most important asset, surely destined to be famous.

Down through one side of the area for miles winds the historic Flambeau which opened a new vision to the early explorers and which has carried on its broad bosom in years gone by untold millions of white pine logs, fitly named, one would think, in the fall of the year, for its flaming walls of gold and crimson. Beside it, strung along the shifting bed of a great pre-glacial river and separated here and there by rolling moraines, lies a chain of spring-fed lakes, fourteen in all, each a gem in its own right. No black burned stumps offend the eye, no gash or scar. The sentinel pine, the soft fronded hemlock and all the sturdy northern hardwoods, the cedar, spruce and balsam, bend as of centuries ago above beaches of clean sand and waters clear as crystal. Springs and streams are everywhere. Trails, many of them first worn by the red men, rise and dip and wind in all directions. All this within boundaries compact yet wholly ample.

Until recently inaccessible, well graded highways have at last entered its portals and, once acquired, a few miles of driveway and the laying out of public camp grounds, bathing beaches and other facilities, will open it to all. We are working against time to bring this about, for the loggers have reached its borders, and only the generous support of the press and a fast growing sentiment that the thing must be accomplished, has kept it as it is. That it will be saved as another link in the chain of great public playgrounds, from East to West, seems certain.

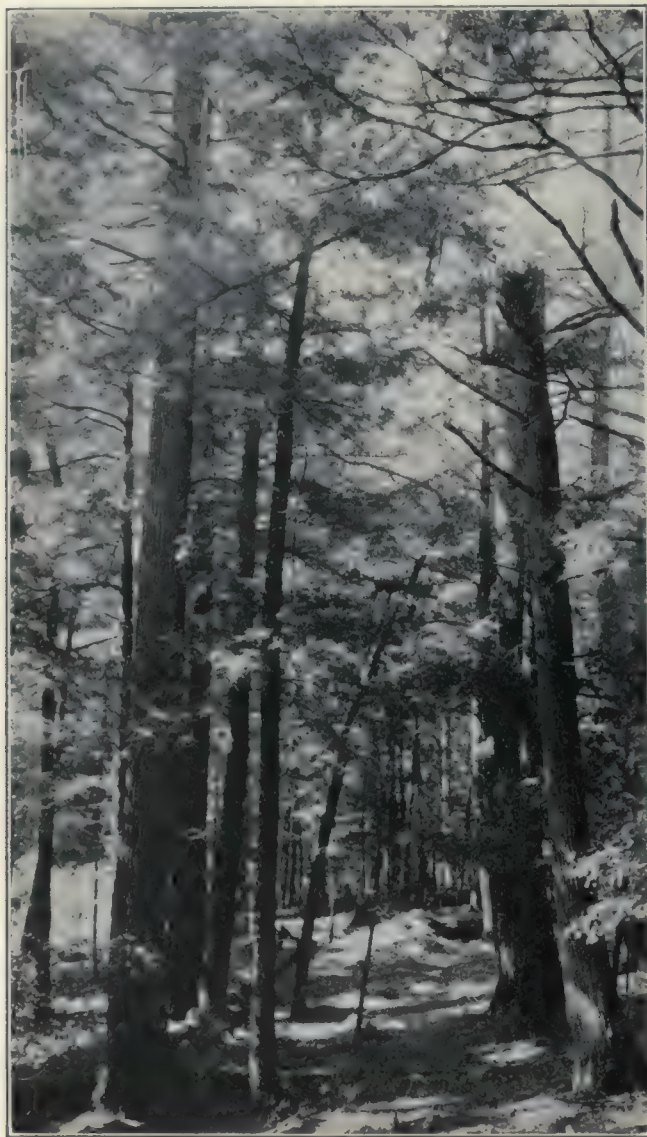
Just a few weeks ago, while the colorings of autumn were



WHEN THE COLORINGS OF AUTUMN WERE BRIGHTEST, THE AUTHOR VACATIONED, FOR A PURE GOLD WEEK, IN THE PARK, CANOEING DOWN THE RIVER AND UP THE LAKES, CARRYING THE FEW SHORT PORTAGES, FISHING, PHOTOGRAPHING AND SHELTERING AT NIGHT WITH ONLY THE STARS TO SEE.



brightest, the author of this humble homily, with the patient one who shares his few ups and many downs, vacationed, for a pure gold week, in the park, canoeing down the river and up the lakes, carrying the few short portages, fishing, photographing and sheltering under a tent at night, "with only the stars to see." It was an old story, in a way, and yet it was always a new pleasure to see the deer standing on the shores and in the shal-



THE SENTINEL PINE, THE SOFT FRONDED HEMLOCK AND ALL THE STURDY NORTHERN HARDWOODS, THE CEDAR, SPRUCE AND BALSAM BEND AND SIGH, AS OF CENTURIES AGO, IN THIS UNMARRED BIT OF THE NORTH. NO BLACK STUMPS OFFEND THE EYE—NO GASH OR SCAR.

lows, watch us with inquisitive eyes, or startled beside the trails, retreat to stop and gaze; to step into the midst of a flock of partridges, strutting and unafraid; to listen, in the ghostly silence of the moonlit solitudes and sense the busy movements of the life about, the mink, the otter and the fox, the muskrat and the beaver: to hear the quavering call of the loon, the

splash of the fish and the squalling hoot of the great owl—all as in the days when the only habitation was a tepee, when the worn top of the desk upon which this is written was potent in a seed not yet dropped to the ground.

Some day books may be big enough to tell what this wilderness unfolds to its intimates, but not until paper is made of something more common than wood pulp.

Not long ago a lumberman told me that he believed in what he called the theory of forestry, but that, in America, conditions are not yet ripe for it—said that it pays in Europe because their timber is of greater value. And as he talked he pulled from his pocket a box of Swedish matches, which had come across the water to sell in competition with our product, to light his cigar. I wondered how their values could be higher, when the forests of this country are sharing their market and meeting with their competition here. I thought there must be something interesting about their system, there where they dream that forestry is an established fact, not alone a theory, and that practising horse sense thrift beats sudden exploitation. Of course, he knows his business, and I, who only love the woods, do not.

This was supposed to be the story of the Northern Lakes Park—and it is. You who are aware that, so far as concerns our timber, we have scooped almost to the bottom of the barrel, may wish us well, here in Wisconsin, where we have been fighting the desires and the misunderstandings of some for the sake of all, blazing the way toward preservation of our shaded shorelines, and, so far as may be, return of beauties lost, the cloaking again, in God's green mantle, of roadsides, plains and hills, stretching the hand of forest husbandry to our barren acres, that once again that crop may grow unscathed.

Those who would keep the enjoyment of the beautiful may well join hands with you who would perpetuate a timber supply. Those who would cherish a hem of that garment are one in purpose with you who would stay from needless waste, and regain that most necessary resource.

Thoreau said, "In wildness is the preservation of the world." He was right. We are at stake, as well as the trees. We must not permit ourselves to run to seed in plowing and merchandising, and pulling and hauling and mauling for the sake of dollar and penny profits. We must keep, as a safe anchor to windward, near to us, the inspiration of things unmarred, as a kind creator made them. Robert Louis Stevenson put it better, when he said that "It is not by any means certain that a man's business is the most important thing he has to do." Anyway, not the business that keeps us in a rut of selfishness and chains us to the commonplace.



# HENRY FORD'S FOREST

By Ovid M. Butler

Forester, American Forestry Association

**I**N THE upper peninsula of Michigan, where there are still some long stretches of wooded landscape, Henry Ford has acquired a forest of several hundred thousand acres. It is a good game country, as game in that part of the state goes, but Mr. Ford did not buy those timbered acres as a hunting ground. Far from it. He had another purpose and that purpose forms one of the most interesting stories in American forestry today.

Already, Henry Ford's forest has become an active unit in the Ford operations. At Iron Mountain, Michigan, Mr. Ford has built one of the most modern saw-mills in the world. Forest and mill are one hundred miles apart, more or less. Up in the woods, Ford tractors are building logging roads in the timber and when the snow flies, they will be busy from daylight to dawn hauling logs over iced roads to a railroad which will transport them to the Iron Mountain mill. There they will be ripped and resawn into boards which will pass on automatic conveyors out of the mill directly to the lumber piles in the yard and then to the dry kilns for final seasoning.

At the rear of these dry kilns, great doors open into a body plant of steel and concrete construction 420 feet long by 120 feet wide and the lumber, now manufactured from logs purchased from contractors, moves on continuous tracks to a score or more of different machines which convert it into a score or more of different wooden automobile parts. These in turn are shipped to assembling plants back in the Detroit district and in the course of a few weeks are part and parcel of the finished Ford car to be seen on every highway in every state in the whole United States.

Why did Henry Ford buy this great tract of timberland, which in the aggregate is almost equal to the total area of improved farm land in the whole northern peninsula?

## A Million Cars! A Million Trees!

If you will take the trouble to investigate, you will probably be surprised to find what a factor the forest is in the making of Ford cars. Weight for weight, wood is stronger than steel and Henry Ford's eternal quest is to obtain the required strength and elasticity without having to lug useless weight. It requires on the average 250 board feet of lumber for every car Ford manufactures.

That is a pretty good lumber content for the average northern hardwood tree and when you consider that Ford is making around a million cars a year, a forest of a million trees a year begins to pass before your eyes. A sizable forest, indeed! Twenty-five thousand acres of timber annually to Ford the present generation from one years end to another! That will give some clue to why Mr. Ford has bought a big forest.

"But is Henry Ford actually practicing forestry?" Among foresters and lumbermen—and a lot of other people, too, for that matter—this question has been asked many times since announcement of Ford's timberland purchase was made. Some of the lumbermen were inclined to shake their heads and smile wisely. Most of the foresters assumed a hopeful attitude and tried not to be skeptical. They have been fooled before on newspaper reports. But no



HENRY FORD'S FOREST IN NORTHERN MICHIGAN, SHOWING CHARACTER OF THE HARDWOOD TIMBER. MR. FORD IS GOING TO USE HIS FOREST, BUT HE IS GOING TO KEEP TREES ALWAYS GROWING ON THE LAND.

one seemed to know exactly how Henry Ford was setting out to handle his newly acquired forest, so I went to Iron Mountain to see for myself. And I found that in a very serious minded way, he is harvesting his mature crop of trees, leaving his young, fast growing trees for an on-coming crop and ridding this young forest of the hazards of fire by cleaning it of all brush resulting from logging. If that isn't forestry, what is?

The first man I talked to in Iron Mountain was Mr. E. G. Kingsford, vice-president and general manager of the subsidiary company which is conducting Mr. Ford's



forest operations. Mr. Kingsford knows timber. He knows the lumber business. Years ago, he started as a timber cruiser in the north woods. He has seen the northern forests recede and great areas of fire swept desolation take their place. He has studied these northern lands and he has lived long enough to see what they will do in the way of growing new crops of timber if given half a chance.

### Mr. Ford's Look Ahead

When I expressed an interest to know what led the greatest of automobile manufacturers to embark upon a forestry program, he replied.

"Mr. Ford is simply looking ahead. Like a great many other large manufacturers in this country, he needs lumber. His present requirements call for over two hundred million feet annually. He may need more. In any event, he needs lumber in very large amounts year in and year out. He doesn't want his business to be in any way unsettled by sudden or periodic timber shortages. He doesn't intend that the production of Ford cars will cease when he dies. He wants to assure the next generation a Ford car at a low price.

"In the past, Mr. Ford has been buying his lumber in the general market. Following the war, circumstances arose which turned his attention to the timber situation in this country. The lumber mills charged him \$140 and \$150 a thousand feet for some of his lumber. Anyone who knows anything about the cost of manufacturing lumber, knows that such prices at the mill are unfair. Why did the mills do it? Because the demand for logs and lumber was far in excess of the supply.

"That was a temporary situation, to be sure, but with the supply of timber in this country disappearing at an alarming rate and the demand for wood gradually increasing, it is only a question of time until such situations

become chronic. Mr. Ford does not desire to have his business in any way dependent upon a disappearing supply of raw wood. He has not taken up lumbering and timber growing as a hobby. It is strictly a business proposition. He is simply making permanent provision for his future lumber and wood requirements.

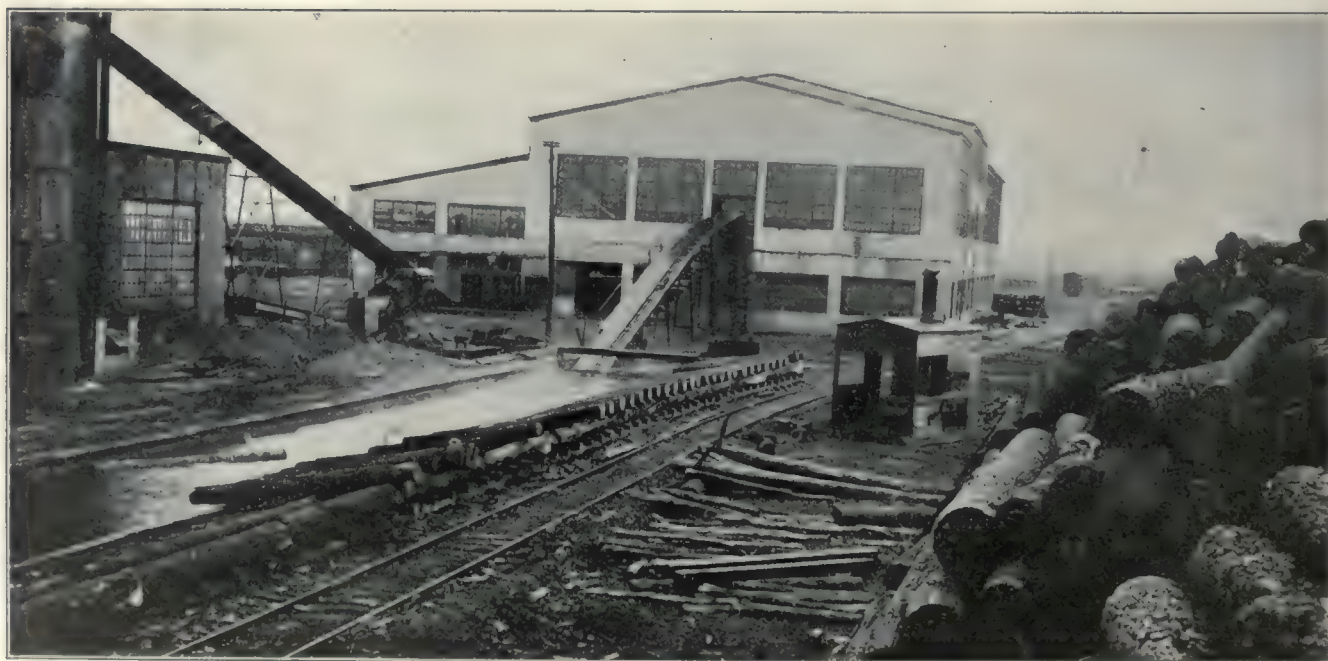
### Starting In A Small Way

"In our woods work, which began last winter, we are starting in a small way. We logged only about a million feet. That is only a drop in the bucket for our mill which has a capacity of 115 million feet a year. But we are buying logs on the outside from jobbers and contractors while we can. That won't be possible long, because the big lumber mills are grabbing up the remaining patches of stumpage as fast as they can get the money to buy with. And the lumber mills are not selling logs. This winter we will log about three million feet and then we expect gradually to expand our operations so as more nearly to meet our mill requirements."

The next day, I traveled a hundred miles northward to the little village of Sidnaw and then four miles beyond to the Ford logging camp, its line of freshly-painted portable houses standing out bright against the forest background. There I met Hermann Hartt, logging superintendent. Mr. Hartt is a timber man of long experience who admits that lumbering according to Ford's program keeps him thinking in high gear and is opening his eyes to a lot of things he didn't used to believe.

### A Modern Logging Camp

He first took me through the camp. It is built to accommodate eighty men. Sixty were then employed, building logging roads, felling timber, burning brush and skidding logs. The camp is modern in every respect and is run in a modern way; but it is not overdone. There are other logging camps, particularly in the west which



HENRY FORD'S SAWMILL OF STEEL AND CONCRETE CONSTRUCTION AND ONE OF THE MOST MODERN IN THE WORLD, LOCATED AT IRON MOUNTAIN, MICHIGAN. IT HAS A CAPACITY OF 115 MILLION FEET A YEAR.





THE CHAIN CONVEYOR WHICH CARRIES THE LUMBER FROM THE MILL TO THE LUMBER PILES IN THE YARD. THUS SAVING MAN AND TEAM HANDLING. FROM THE YARD THE LUMBER GOES TO THE BODY PLANT, WHERE IT IS MADE INTO PARTS FOR THE FORD CAR.

are just as modern. It is electrically lighted and steam heated throughout. The bunk houses are furnished with double-decked iron bunks. A flunky makes the men's beds and cleans the houses daily. A wash-woman is provided who looks after the men's washing for the small sum of \$1.25 a month each, and there is a commissary where new clothing, smoking and chewing tobacco, etc., is sold at cost. Cleanliness looks out from every corner. One building is set aside as a club and reading room for the men and furnished with chairs, tables, and magazines. There is a rule here: "No spitting on the floor."

"The old-time lumberjack don't like that rule," said Mr. Hartt. "Some of them hit the trail rather than live up to it."

"It has been reported that the lumberjacks are furnished with bath tubs. Where are they?" Mr. Hartt was asked. "They are not in yet, but they are coming this winter," he replied.

#### Mr. Ford's Personal Quarters

"There are some bath tubs at the other end of camp, though," he continued, and then he showed me the quarters set apart for the accommodation of Mr. Ford and his associates when they come to inspect operations. These quarters consist of several portable houses similar in exterior appearance to the others, but the interior transports one back to the comforts of the modern city. In addition to electric lights and steam radiators, there are home-like fire places, comfortable willow furniture, shining new, and rugs cover the floors. In one corner, a door leads into a small bath room as white as a snow-bank. Unconsciously, one garbed in woods clothes and hobnailed shoes found himself stepping about on tip-toe.

From the camp, we went back in the woods and looked

over the area which was logged last winter. Cutting to a twelve-inch diameter limit, they had removed some seven to ten thousand feet to the acre and yet here was a fair young forest remaining and clean of brush and debris. Ford's forest is largely northern hardwoods and hemlock, the latter species making up about 25 per cent of the stand in volume. The hardwoods are mainly birch and maple with an understory which runs heavily to maple. On the area cut over, the understory appeared to have been lighter than in the adjoining stands.

"This is where we started,—sort of a try-out," explained Mr. Hartt. "We are not cutting and logging much differently from the ordinary lumberman, but we are looking out for our young trees and getting rid of the brush. We leave all thrifty trees twelve inches and under, excepting on these hemlock ridges where we cut the hemlock clean. It's a bad fire trap there. In the swamps, we aim to leave as much young cedar and spruce as possible. I try to make my men use their heads about cutting low stumps and we insist that they be mighty careful about falling big timber so as not to break up the small trees.

#### How Brush Is Burned

"Brush piling and burning is done right along with the cutting. One good trimmer can keep eight or ten men busy piling and burning brush. Just as soon as the limbs are trimmed from the tree after it is cut, they go on the fire. I find that's the most practical system. About twenty-five piles to the acre. That burns over only five or six per cent of the area and we try to keep these piles away from the young timber just as much as we can."

"There are men who claim that hardwood brush can't be burned satisfactorily," I suggested.

"That's just what I thought when I started," replied



Mr. Hartt, "I was pretty skeptical, but now I know better. We can burn hardwood brush any time—during the summer or in a blinding snow storm in winter. All you've got to do is to start a small fire with birch bark and twigs and when it's burning good, pile on your limbs. You can burn it slick and clean. And I tell you this brush burning in the woods is a great thing. At first, I couldn't see it, but now I'm enthusiastic about it. It makes logging a lot easier and then it's the best sort of fire protection. I figure that our cost of skidding is cheapened seventy-five cents a thousand by getting rid of the brush before we begin moving logs."

The cost of handling the brush in the manner described, I was told, cost the company last winter about \$2.50 a thousand feet. The net cost, Mr. Hartt figured after deducting the amount saved in skidding and other

There was no doubt but that Mr. Hartt had burned his brush clean. Limb and top material under four or five inches in diameter was little in evidence on the cut over area. The company is cutting to an eight inch top limit and seven inches where the logs are straight. Some material below this size remained. I was told that the company is endeavoring to work out a plan of utilizing this small waste in a distillation plant or otherwise. It has sold some for cordwood and mining timbers, but the local market is limited. Hemlock logs are being barked in the woods and the bark shipped to a tannery. The accompanying photographs show how the woods look after lumbering is completed.

#### Horses Persona Non Grata

We then went over to where logging operations were



"WHERE LUMBER HAS GROWN ONCE IT WILL GROW AGAIN," SAID MR. KINGSFORD. THIS IS A SCENE IN THE AREA CUT OVER LAST WINTER, SHOWING ABSENCE OF BRUSH, AND YOUNG TIMBER LEFT FOR A SECOND CROP.

work in the woods, would be from \$1.50 to \$1.75 cents a thousand feet.

"But however you look at it, I believe its a paying proposition," declared Mr. Hartt. "If you are going to grow timber on the land, the young forest you've got left is worth the cost and if you are going to sell the land for farming, its worth just that much more for having the brush cleared off of it."

#### Out of the Old School Into the New

Here was an old-time logging man talking like a forester. Less than a year before, he had been taken out of the old school of timber-faring men who look upon forestry as theoretical bunkum and he had been set up against the task of putting his own logging operation on a forestry basis and making it pay. It was apparent that he had done a lot of thinking and that he was making progress fast.

in progress on another season's cut. Ford tractors were at work pulling stumps and grading the logging roads. Brush was being burned as it was trimmed from the logs and tops. The only place that horses were in evidence was in the skidding and this was being done by contract. Apparently Mr. Ford does not believe in owning horses, but it hasn't yet been established that a tractor can skid logs in the north woods as cheaply as horses. The logs were being decked along the roads, where during the winter they will be loaded on sleighs and hauled to Sidnaw for shipment to the mill at Iron Mountain.

From the woods to Sidnaw is three and a half to four miles and all log hauling is done by tractors on snow roads. Last winter the company used nine foot sleigh bunks, and averaged 3,000 feet to the load, six loads a day to the tractor. The cost was given me as seventy-five cents a thousand feet. This winter the plan is to





THE FORD LOGGING CAMP FOUR MILES FROM SIDNAW, MICHIGAN. IT IS ELECTRICALLY LIGHTED AND STEAM HEATED THROUGHOUT. NO BATH TUBS YET, BUT THEY ARE COMING THIS WINTER.

use 12-foot bunks which are expected to about double the loads. The tractor runs inside the iced tracks and according to Mr. Hartt can attain a maximum speed of twenty miles an hour.

#### Ford Wages to the Lumberjack

The standard Ford wage is \$5 a day for the first sixty days and then \$6 a day is paid in the woods as well as in the Ford mill and factories. But he has to be a good lumberjack or he soon gets his time. This wage includes board, the company figuring board at \$2 a day, so that the wage scale is better stated at \$3 and \$4 a day and board. This stands out in marked contrast to the wage

of \$1 to \$1.50 a day and board now being paid in other logging camps in the north woods.

The next day I again spent several hours with Mr. Kingsford in Iron Mountain. There were a lot of questions I wanted to ask. For example, how could the company as a business proposition pay its lumberjacks three and four times the wage other lumbermen are paying and in addition \$2.50 a thousand feet for disposing of the brush? Mr. Kingsford smiled when we got to that point.

"Last winter the logs we bought cost us \$28 a thousand feet at the mill. We delivered our own logs at the mill for \$26 a thousand feet and that included a freight



ALL BRUSH IS PILED AND BURNED BEFORE THE SKIDDING OF LOGS BEGINS "IT MAKES LOGGING EASIER, AND THEN IT'S THE BEST SORT OF FIRE PROTECTION," SAYS THE LOGGING SUPERINTENDENT.



charge on the haul from Sidnaw to Iron Mountain of \$5.75 a thousand feet. Bear in mind, too, that last winter, we were just getting started, we logged a very small amount of timber and we charged off initial expenditures pretty heavily. As for the higher wages, we get more work out of the men.

#### Preparing For the Bad Fire Year

"The cost of the brush burning, we admit, seems high. We hope to get that down, but whatever the cost we are going to burn that brush. Fire is ninety per cent of the problem of growing timber here in the north and I believe the forest fires can be definitely prevented only by getting rid of the brush menace. A fire protective system is a good thing and will help keep down forest fires, but during a dry windy summer such as we have up here

not appeal to him for this reason and also because of the tax burden. Until timber taxation is put upon a fair basis, I doubt if the profitableness of protecting cut-over lands will appeal to the average business man, but it must be clear that if these northern lands which were cut over thirty and forty years ago and which today are burnt and barren for miles, had been protected, they would now bear a timber crop which would make them worth many times their present value. The holder of such cut-over lands would have a valuable property instead of a barren waste which he is glad to sell for \$5 or \$10 an acre or less.

#### "Timber! That's Our Crop"

"Yes, lumbermen tell us that raising timber as a business proposition won't go. So far as Mr. Ford's business



HERMANN HARTT, LOGGING SUPERINTENDENT, AND AN AREA FROM WHICH THE HEMLOCK HAS BEEN REMOVED AND THE BRUSH PILED AND BURNED. MERCHANTABLE HARDWOOD YET TO BE CUT. MR. HARTT WAS NOT FOR BRUSH BURNING WHEN HE STARTED IT, BUT HE IS EMPHATICALLY NOW.

every five, six or seven years, it won't stop the fires once they get started in old cut-over slashings. With the slash cleared up, I believe that our woods will be quite safe from fire after about two years. By that time the sprout growth will be up and there won't be much inflammable material to give trouble. Of course we will have to maintain some protective system because our holdings are not all blocked up,—how much we haven't worked out."

That was Mr. Kingsford's explanation of why the company had adopted the policy of burning its slash rather than in leaving it in the woods and expending possibly a smaller amount of money in intensive fire protection.

"Mr. Ford is possibly able to practice more expensive and intensive methods of lumbering than the average lumberman, who is looking ahead only until he dies. The protection of cut-over lands for timber production does

is concerned, we believe that it will. I have studied these northern lands for forty years and I think I know what they will do in the way of growing timber. Land which has grown timber once will grow timber again."

"How about the common cry that these northern cut-over lands are needed for agriculture," I asked.

"The trouble with the American farmer today," replied Mr. Kingsford, "is that he is suffering from over production. Whenever there is demand for it, he can raise two years' supply of farm produce in one year. Why weigh him down with more land, particularly up here in the north where the land must be classed as generally poor. Of course, there are areas of good farm land here, but the sum total of land acreage which is poor for farming and good for timber growing is so large that the high grade farm land will naturally pass into farms on its economic merits.



"So far as Mr. Ford's holdings are concerned, we are not even distinguishing between so-called farm land and forest land. These holdings aggregate about 400,000 acres, of which some 250,000 contain merchantable timber. The remainder bears young growth and some of it is too rough and rocky to even grow timber. We don't

know what we will do with that. But where timber will grow, we are going to grow it. The one essential crop that is suffering from under production—yes, almost total lack of renewal—is timber. That's our crop."

And looking at it in that light, the Ford organization has adopted a definite forest program and is on its way.

## Harvesting Christmas Trees By Topping

By C. R. Anderson

THE natural way to cut Christmas trees is to first fell the whole tree. It is commonly followed not only by the head of the family who "flivvers" out to the woods the day before Christmas with his trusty hand ax, but also by the professional cutters who buy,



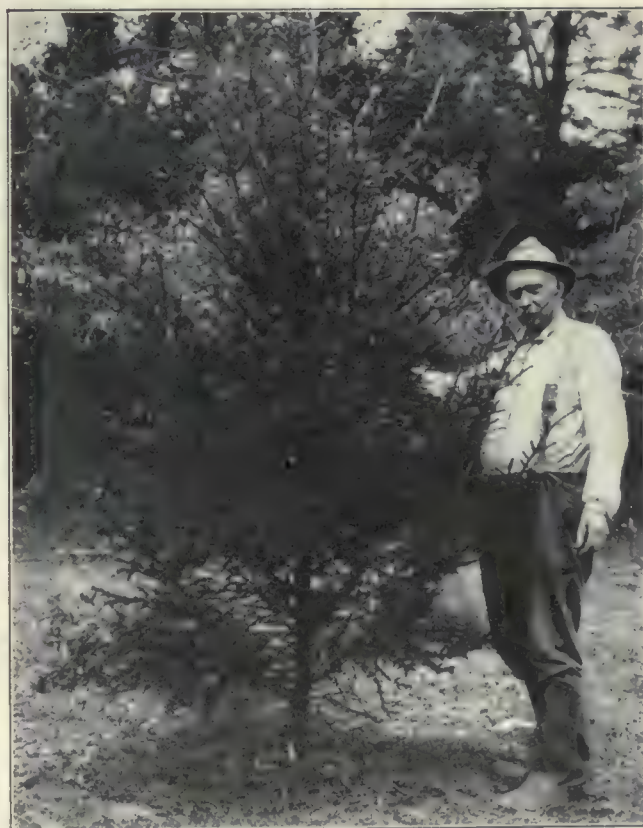
PRODUCING CHRISTMAS TREES BY TOPPING METHOD. TREE IS CUT JUST ABOVE A STRONG, VIGOROUS BRANCH, WHICH THEN STRAIGHTENS UP AND IN FOUR OR FIVE YEARS MAKES ANOTHER TREE. EIGHT TREES HAVE BEEN TAKEN SUCCESSIVELY FROM THIS PARENT STUMP.

cut, and ship, perhaps to distant markets. The cutting of the first tree ends the matter for that tree. By contrast, the method of harvesting adopted by one grower is interesting, to say the least. This man is George Wagner, of Monroe County, Pennsylvania. By his method one tree, and frequently two trees, may be cut at 3 to 5 year intervals from the same stump until finally a number have been obtained. The one pictured shows that 8 trees have been cut at various times.

The idea is simplicity itself. It consists of topping above a prominent branch, and giving the latter a

chance to take the place of the top which was taken out. Even though the branch may be poorly shaped at the time, it will commonly respond and make as symmetrical a crown as was the original. Only one other point need be kept in mind by the cutter; that is, when topping to leave the other branches below the one expected to make the next tree remain on the tree so that there may be as much food-making surface as possible.

Mr. Wagner claims no great originality for the use of the method. He has been following it, however, for years, and can show many stumps from which 6 or more trees have been cut in the last 20 years. So far as I know, he is the only man in Pennsylvania using the idea. Readers of AMERICAN FORESTRY who visit the Poconos will find it very interesting to call on Mr. Wagner and to see his work and results. Pictures can do no more than give them a glimpse of it.



A TREE JUST CUT FROM ONE OF THE TWO UPPERMOST POSITIONS SHOWN IN THE PICTURE ABOVE. THIS FINE TREE WAS ONCE A BRANCH. SUCH TREES AS THESE SELL FOR FROM \$1.50 TO \$1.75 PER BUNDLE OF TWO.



# THE ROAD TO WISCONSIN'S GREATER OUTDOORS

By Henry C. Campbell

Assistant Editor of The Milwaukee Journal

A STATE forest policy which aims to grow timber on all non-agricultural land that is adapted to the purpose forms the backbone of an outdoor program of construction and reconstruction that is winning general support in Wisconsin in a way that is most gratifying.

The program is so sound, far-seeing and appealing that opposition to state forestry, which only a decade ago was very strong and bitter, has all but vanished. There now exists, in fact, a public sentiment that is proving to be a positive force in the political life of the State. Commendation of the cause of forestry is

tunities for recreation and the increase in the summer tourist trade that will result from public forestry, when practiced on an adequate scale, are an integral part of the program. The organization of an ample and efficient system of fire protection is urged as a measure most essential to the conservation of the virgin forests that remain, which means the preservation of some of Wisconsin's old-time beauty and as an absolute prerequisite to reforestation.

Hundreds of miles of the shores of many streams and lakes in Wisconsin are bare, and it is pointed out that the first work in the way of reforestation should



A ROADSIDE LIABILITY

Forest lands abandoned to fire and disregard neither grow trees nor attract summer tourists.

expressed in all the political platforms this year, and there is every indication that the day of achievement is drawing near.

## The Re-beautification of Wisconsin

It is a varied and comprehensive program. Its aims include the production of the timber that Wisconsin needs for all ordinary purposes and of a surplus for export. The creation of community forests as well as state forests is contemplated. The re-beautification of Wisconsin, the conservation of wild life, the oppor-

be done in these places in order to restore a natural setting to every lake and stream. This, it is made known, would conserve wild life by providing cover for deer and other game and would better fishing by providing food and shade along streams and around lakes.

## Natural Playgrounds in the Big Woods

There still exist in Wisconsin considerable tracts of primeval forests dotted with lakes and criss-crossed with creeks and rivers. The program seeks to pro-



vide that in these regions there shall be established three or four state parks ranging in area from 6,000 to 10,000 acres. These would contribute a charm of wild, natural playgrounds in the big woods. In addition, appeals are being made to villages, cities and counties in all parts of the state to preserve spots possessing real scenic interest, such as waterfalls, gorges, wooded river valleys and sections of inland lakes, as well as spots of historic interest, by transforming them into public parks. The idea is that the state shall acquire large parks only and that counties and municipalities shall provide the small parks that are desirable or necessary.

As part of the work necessary to re-beautify Wisconsin, the program provides for planting native trees along both sides of the many hundreds of miles of

lined highways. In several parts of the state this work has already been initiated.

#### In the Interest of Anglers and Hunters

Radical measures in the interest of anglers and hunters are advocated. It is proposed, for example, to require every resident adult male fisherman to pay a license of \$1 a year, which would provide a fund of at least \$300,000 annually, and to use this money exclusively for the propagation, planting and protection of fish. In this way the number of fish in Wisconsin waters could be multiplied and unsurpassed sport be insured in the future. It is proposed, moreover, to devote the large income derived from hunting licenses, which is now spent for a number of purposes, including the propagation and protection of fish, to the one



A ROADSIDE ASSET

Forests provide the one way in many parts of the State to make highways, which have cost huge sums, pay dividends.

concrete and other highways that have been constructed in the state during recent years. These roads, which represent an outlay of many millions of dollars, are hardly excelled anywhere from a utilitarian point of view, but long stretches of them run through open country and are devoid of shade and beauty. Much stress has systematically been laid upon the fact that tree planting, which would cost the merest fraction of the cost of constructing these roads, would make them as pleasing to the eye as they are to the body and would give Wisconsin thousands of miles of tree-

object of fostering the interests of hunters. To this end the program provides for the establishment of wild life refuges, game preserves, breeding grounds for migratory fowl—to be used in season as public shooting grounds—the propagation of game that can be advantageously raised in this way, Hungarian pheasants for instance, and more efficient protection of game.

#### The Tourist Trade—Wisconsin's Great Opportunity

In sum, the out-door program which is being pressed in Wisconsin, with no little success and much promise,

(Continued on Page 758)



# NOMINATIONS FOR OFFICERS

Nominations for officers of the American Forestry Association made by the Committee on Elections, to serve for 1923 or as otherwise stated, are as follows. Members, however, may insert the names of other candidates for whom they desire to vote. Ballots will shortly be mailed to the members. The polls close January 8, 1923:

## For President

HENRY S. GRAVES, Connecticut.\*

Dean Yale Forest School. Former Chief U. S. Forest Service.

\*Col. Graves' nomination was endorsed by the following in accordance with the terms of the By-Laws:

Faculty Forestry Department, University of Michigan (4); Staff Forestry Department, Cornell University (8); Board of Directors, Colorado State Forestry Ass'n (10); Barrington Moore, Mrs. Charles Douglass, P. G. Redington, T. D. Woodbury, S. T. Dana, Arthur T. Upson, H. N. Wheeler, A. S. Peck, Mrs. Russell H. Opdyke, Harry H. French, T. R. Truax, George M. Hunt, E. V. Jotter, Edw. P. Ivory, E. M. Davis, C. J. Humphrey, Ernest E. Hubert, E. M. P. Dennis, George N. Lamb, A. L. Richey, W. C. Ferguson, Richard T. Ely, D. C. Everest, G. B. Heinemann, R. Y. Stuart, A. E. Rupp, George H. Wirt, John W. Keller, J. S. Illick, L. E. Staley, Robert W. Hunt, A. S. Peabody, The Permanent Builder, William L. Hall, Philip W. Ayres, J. M. Pritchard, F. J. Schroeder.

## For Treasurer

ROBERT V. FLEMING, District of Columbia.

Vice-President Riggs National Bank, Washington, D. C.

## FOR VICE-PRESIDENTS

(21 to be elected)

M. L. ALEXANDER—Louisiana.  
Chairman, Conservation Commission.

JOHN W. BLODGETT—Michigan.  
President, National Lumber Manufacturers' Association.

RICHARD F. BURGESS—Texas.  
President, Texas Forestry Association.

GEORGE M. CORNWALL—Oregon.  
Publisher, The Timberman.

DR. HENRY S. DRINKER—Pennsylvania.  
President, Pennsylvania Forestry Association.  
Member Pennsylvania Forestry Commission.

D. L. GOODWILLIE—Illinois.  
Chairman, Forestry Committee, U. S. Chamber of Commerce.

MRS. WARREN G. HARDING—Ohio.

BOLLING ARTHUR JOHNSON—Illinois.  
Publisher, Lumber World Review.

A. W. LAIRD—Idaho.  
President, Western Forestry and Conservation Association.

JESSE M. OVERTON—Tennessee.  
President, Tennessee Forestry Association.

THOMAS H. OWEN—Oklahoma.  
President, Oklahoma Forestry Association.

FILIBERT ROTH—Michigan.  
Dean, School of Forestry, University of Michigan.

B. N. SNELL—New York.  
Member House of Representatives.

WILLIAM KENT—California.

HARVEY N. SHEPHERD—Massachusetts.  
President, Massachusetts Forestry Association.

BONNELL H. STONE—Georgia.  
Chairman, Georgia Forestry Committee.

LOU D. SWEET—Colorado.  
President Colorado Forestry Association.

W. D. TYLER—Virginia.  
President, Southern Forestry Congress.

HERMANN VON SCHRENK—Missouri.  
President, Missouri Forestry Association.

JOHN W. WEEKS—Massachusetts.  
Secretary of War.

MRS. MAUD G. WINTER—Minnesota.  
President, Federation of Women's Clubs.

## FOR DIRECTORS

Serving 1 year (2 to be elected)—See note.

W. A. BABBITT—Indiana.  
Secretary, American Wood Turners Association.  
Member Executive Committee, Association of Wood Using Industries.

JOSEPH H. PRATT—North Carolina.  
Director, North Carolina Geological Survey.

Serving 5 years (3 to be elected)—See note.

HENRY C. CAMPBELL—Wisconsin.  
President, Wisconsin Forestry Association.  
Editor, Milwaukee Journal.

GEORGE D. PRATT—New York.  
Former Commissioner of Conservation State of New York.

GEORGE S. LONG—Washington.  
Chairman Forestry Committee, National Lumber Manufacturers' Association.  
Manager, Weyerhaeuser Timber Company.

NOTE—Twenty-five or more endorsements were received for the following as Directors of the Association. In no instance, however, was the number of endorsements required for nomination on the ballot received prior to November 1st, the date named in the By-Laws. The By-Laws are specific on this point and consequently none of these gentlemen has been legally nominated by petition. The Committee deems it desirable, however, and within its discretion to list herewith the candidates who received twenty-five or more endorsements, with the names of their endorsers.

MR. HENRY C. CAMPBELL, of Wisconsin, was endorsed by H. H. Chapman, Arthur T. Upson, T. R. Truax, George M. Hunt, E. V. Jotter, Edw. P. Ivory, E. M. Davis, C. J. Humphrey, Ernest E. Hubert, E. M. P. Dennis, D. C. Everest, A. L. Osborn, G. B. Heinemann, F. J. Schroeder, R. T. Fisher, Filibert Roth, E. A. Ziegler, Carl P. Fatzinger, E. Clyde Pyle, J. E. Aughanbaugh, Blaine S. Viles, Verne Rhoades, C. P. Cronk, J. J. Fritz, John M. Briscoe, University of Maine Library, R. C. Hawley, J. W. Toumey, R. C. Bryant, Samuel J. Record, T. S. Woolsey, Jr., A. F. Hawes, Harry H. Steidle, Donald H. Hanly, E.

L. Scovell, Willis Munro, Philip P. Wells, Harold O. Cook, W. G. Hastings, E. I. Terry, Harris A. Reynolds.

MR. HENRY E. HARDTNER, of Louisiana, lumberman and member of Louisiana Forestry Commission, was endorsed by R. T. Fisher, Filibert Roth, E. A. Ziegler, Carl P. Fatzinger, E. Clyde Pyle, J. E. Aughanbaugh, Blaine S. Viles, Verne Rhoades, C. P. Cronk, J. J. Fritz, John M. Briscoe, University of Maine Library, R. C. Hawley, H. H. Chapman, J. W. Toumey, R. C. Bryant, Samuel J. Record, T. S. Woolsey, Jr., A. F. Hawes, Harry H. Steidle, Donald

H. Hanly, E. L. Scovell, Willis Munro, Philip P. Wells, Harold O. Cook, W. G. Hastings, E. I. Terry, Harris A. Reynolds, P. G. Redington.

MR. GEORGE S. LONG, of Washington, was endorsed by A. W. Cooper, J. M. Pritchard, William L. Hall, The Permanent Builder, Robert W. Hunt, M. W. Stark, A. S. Peabody, J. E. Bayrd, Frank J. Root, S. P. Newton, F. I. Moulton, California Pine Lumber Industry, H. H. Hettler, John C. Gehant, A. L. Osborn, E. T. Allen, John W. Blodgett, W. M. Ritter, Ernest Dolge, Julius H. Browne, L. C. Boyle, The



Kneeland-Bigelow Company, North Carolina Pine Association, Bolling Arthur Johnson, A. W. Laird, North Carolina Pine Box and Shook Manufacturers Association, Northern Pine Manufacturers Association, F. W. Pettibone, Shelvin-Hixon Company, Huntington Taylor, R. W. Vinnedge, Willipa Lumber Company, R. G. Merritt, Rudolph Dieffenbach, Axel H. Oxholm, Annette D. Conklin, J. M. Witherow, Earle H. Clapp, S. H. Thompson, Herbert McCherry, Ida McCherry, Wilson Compton, R. Clifford Hall, Howard R. Krinbill, E. P. Clark, E. R. Hodson, W. R. Mattoon, D. T. Mason.

MR. GEORGE D. PRATT, of New York, was endorsed by Staff of Department of Forestry, Cornell University (8), R. T. Fisher, Filibert Roth, E. A. Ziegler, Carl P. Fatzinger, E. Clyde Pyle, J. E. Aughanbaugh, Blaine S. Viles, Verne Rhoades, C. P. Cronk, J. J. Fritz, University of Maine Library, John M. Briscoe, R. C. Hawley, H. H. Chapman, J. W. Toumey, R. C. Bryant, Samuel J. Record, T. S. Woolsey, Jr., A. F. Hawes, Harry H. Steidle, Donald H. Hanly, E. L. Scovell, Willis Munro, Philip P. Wells, Harold O. Cook, W. G. Hastings, E. I. Terry, Harris A. Reynolds.

MR. M. W. STARK, of Ohio, lumberman and leader in the Hardwood Manufacturers' Institute, was endorsed by W. M. Ritter, Landon C. Bell, James L. Hamill, J. M. Pritchard, William L.

Hall, F. R. Gadd, Paepcke Leicht Lumber Company, Henderson-Baker Lumber Company, W. E. DeLaney, Rockcastle Lumber Company, Tachudy Lumber Company, Long-Bell Lumber Company, D. H. Moul Lumber Company, Miller Lumber Company, Holly Ridge Lumber Company, Sam A. Cobb Lumber Company, The Permanent Builder, Robert W. Hunt, Lee Wilson & Company, National Lumber Manufacturers' Association, Hardwood Manufacturers' Institute, A. S. Peabody, J. E. Bayrd, Frank J. Root, W. R. Townsend, F. I. Moulton, S. P. Newton, H. H. Hettler, W. D. Tyler, John C. Gehant, A. L. Osborn, E. T. Allen, John W. Blodgett, Ernest Dolge, Junius H. Browne, L. C. Boyle, The Kneeland-Bigelow Company, North Carolina Pine Association, Bolling Arthur Johnson, A. W. Laird, North Carolina Pine Box and Shook Manufacturers' Association, F. W. Pettibone, Northern Pine Manufacturers' Association, W. R. Mattoon, Shelvin-Hixon Lumber Company, William A. Dayton, Huntington Taylor, R. W. Vinnedge, Willipa Lumber Company, Rudolph Dieffenbach, R. G. Merritt, Axel H. Oxholm, Annette D. Conklin, J. M. Witherow, S. H. Thompson, Herbert McCherry, Ida McCherry, Wilson Compton, E. R. Hodson.

MR. J. R. SWIFT, of Pennsylvania, leader in the Forestry Association of Western Pennsylvania, was endorsed by R. T. Fisher, Filibert Roth, E. A. Ziegler,

Carl P. Fatzinger, E. Clyde Pyle, J. E. Aughanbaugh, Blaine S. Viles, Verne Rhoades, C. P. Cronk, J. J. Fritz, University of Maine Library, John M. Briscoe, R. C. Hawley, H. H. Chapman, J. W. Toumey, R. C. Bryant, Samuel J. Record, T. S. Woolsey, Jr., A. F. Hawes, Harry H. Steidle, Donald H. Hanly, E. L. Scovell, Willis Munro, Philip P. Wells, Harold O. Cook, W. G. Hastings, E. I. Terry, Harris A. Reynolds, Society for the Protection of New Hampshire Forests.

MR. WILLIAM P. WHARTON, of Massachusetts, Director of the Massachusetts Forestry Association, was endorsed by R. T. Fisher, Filibert Roth, E. A. Ziegler, Carl P. Fatzinger, E. Clyde Pyle, J. E. Aughanbaugh, Blaine S. Viles, Verne Rhoades, C. P. Cronk, J. J. Fritz, University of Maine Library, John M. Briscoe, R. C. Hawley, H. H. Chapman, J. W. Toumey, R. C. Bryant, Samuel J. Record, T. S. Woolsey, Jr., A. F. Hawes, Harry H. Steidle, Donald H. Hanly, E. L. Scovell, Willis Munro, Philip P. Wells, Harold O. Cook, W. G. Hastings, E. I. Terry, Harris A. Reynolds, Society for Protection of New Hampshire Forests, Massachusetts Forestry Association.

Submitted,  
W. B. GREELEY,  
R. S. KELLOGG,  
P. W. AYRES,  
Committee on Elections.

## ASSOCIATION OFFICERS RESIGN

Mr. Charles Lathrop Pack, who has been President of the American Forestry Association for seven years and a director for thirteen years, has tendered his resignation. He becomes president of the American Nature Association. Dr. Henry S. Drinker, who was president of the Association for three years and a director for ten years, and Mr. Charles F. Quincy, who has been a director for twelve years, have also resigned.

Mr. Percival Sheldon Ridsdale, who for twelve years has been Executive Secretary of the Association and editor of AMERICAN FORESTRY, leaves to become managing editor of *Nature Magazine* and manager of the American Nature Association.

In acting upon these resignations the Board of Directors appointed a committee to express appreciation of the services of these officers. The committee adopted the following resolutions: Resolutions of the Board of Directors, pursuant to announced withdrawal of President Pack, Secretary-Editor Ridsdale and Directors Drinker and Quincy from the work of the Association.

WHEREAS, President Charles Lathrop Pack has expressed his wish not to be a candidate for the coming Annual Meeting in January:

*Be it therefore Resolved*, That the Directors of the American Forestry Association take this occasion to express their deepest appreciation of Mr. Pack's eminent services in building up the Association from a small, almost defunct organization to a membership of over fourteen thousand. During the period of his incumbency a great advance has been made in educating the country to the need and the meaning of forestry. Mr. Pack's efforts have contributed in a very large measure to the present wide interest in forestry on the part of the public. The results of his work will be of increasing importance from year to year. His retirement is a great loss to the Association. That he will continue his interest

in forestry directly and in a parallel field means still further service to the country. The Directors extend to him their grateful thanks for what he has done and their cordial good wishes for the future.

WHEREAS, Directors Henry S. Drinker and Charles F. Quincy have signified their unwillingness to serve further as Directors of the American Forestry Association:

*Be it therefore Resolved*, That the Board of Directors regard their resignations as a great loss to the cause of American forestry. They have given freely of their valuable time and ability in the work of the organization over a considerable period and their wise counsel and experienced judgment will be greatly missed in the future. It is the sincere wish that the Association will continue to have the benefit of their advice and co-operation in the future.

WHEREAS, Percival Sheldon Ridsdale, Secretary and Editor of the Association, has offered his resignation to take effect on December 1:

*Be it therefore Resolved*, By the Directors of the American Forestry Association that his resignation is accepted with great reluctance. Largely through his efforts the Association has attained an eminent position in educating the American public to the necessity and importance of practicing forestry in our rapidly vanishing forests. We wish to take this occasion to thank him most heartily for his services and to wish him the best of success in any further ventures.

NELSON C. BROWN,  
HENRY S. GRAVES,  
ROBERT P. BASS,

For the Board of Directors of the  
American Forestry Association.



## WHAT THE GOVERNORS OF THE LAKE STATES

**HON. J. O. PREUS**

Governor of Minnesota

**O**UR first concern, in any attempt to conserve and develop our forests, must be that of finding some way of preventing, or at least reducing, the forest fires which recur at altogether too frequent intervals, above any money consideration involved, is our duty to prevent loss of human life and to protect the families and homes of those who are trying to develop these portions of our country. From a property standpoint, the potential value of young growing timber destroyed is undoubtedly much greater than the value of mature timber lost.

The organization of our State Forestry departments demands the best thought of those interested in the State's welfare. In so important a matter, we must cast aside both sentiment and politics. We must be sure we have just the right man at the head of these departments, and those fully qualified are scarce. A forestry official must not only have the technical training, but he must have executive ability of a high order. He must be able to deal with the different classes of people who come into the forests, or who have interests there; railroad executives and employes, lumbermen, campers, hunters and settlers, some of the latter foreign born and ignorant. He must be something of a police executive, for he must enforce the fire laws firmly yet fairly. He must be a teacher, for fire prevention involves education of the public. And he must be ready and able, if emergencies come, to direct efficiently the large bodies of men needed for fire fighting and sometimes for rescue and relief work.

Forest development is another large but distinct problem. Besides fire protection it involves such questions as classification of lands and soil survey; supervision of lumbering operations; draining swampy timber lands (for drainage may kill the timber and promote fires), and finally reforestation. Whether tree planting on a large scale can be better undertaken by the State or by private parties is a mooted question. Generally large undertakings of this kind can be done more efficiently by private enterprise. But there is little inducement to private capital to go into tree planting when taxes must be paid upon growing timber twenty-five to fifty years before there is any return upon the investment. The present tax system not only makes tree planting prohibitive, but it encourages the cutting of immature timber. A production tax would make it to the timber owner's interest to let the trees grow as long as possible.

**HON. JOHN J. BLAINE**

Governor of Wisconsin

**W**ISCONSIN is, and has been for several generations, a large producer of forest products. The upper twenty million acres of this State was covered with a merchantable forest of pine, hemlock, cedar and varieties of hard woods, like birch, maple and elm. The southern fifteen million acres was a forest of hard woods, in which the oaks predominated. The presence of this great acreage of merchantable timber resulted in the establishment of a wide diversity of wood-using industries, and many of our cities and towns owe their existence and prosperity to these industries. The sawmills, pulp and paper mills, furniture and sash door factories, and many smaller wood-using establishments have always offered, and still offer, a livelihood to thousands of Wisconsin citizens, and were these industries to cease to operate it would reduce the possibility of employment very materially in many of our cities, such as Sheboygan, Wausau, Oshkosh, and many others. Of equal importance is the fact that farms cannot be operated without lumber, posts,



## SAY OF THE FORESTRY SITUATION THERE

and other products of the forest. It has been reliably stated that the average Wisconsin farm uses 2,000 board feet of lumber per year. As we have within our borders over 200,000 farms, it would require at least 400 million board feet of lumber per year to take care of our agricultural needs alone. We are rapidly expanding in an agricultural way, so that our demands on the forest are not apt to decline, in spite of the many substitutes that are replacing the use of wood.

Our forest supplies are steadily being depleted. We have in Wisconsin millions of acres of wild land, much of which is suited for fine farms, and which is being taken up rapidly for such purposes, but there are other large acreages which are better suited for the growth of our most valuable native timber trees. Every acre of Wisconsin land not farmed or being cleared for farms is well adapted for growing the timber supplies that will be needed in the future for our industries, farms, and the comfort and well being of our population. It is particularly necessary to protect from fire the thousands of acres now coming up to young timber, and to so manage the cutting of our virgin and second growth forest areas as to insure a new stand of timber until such time, at least, as these lands are more urgently needed for other purposes.

Wisconsin possesses many recreational advantages and it is well not to lose track of the value of trees and areas of forest lands in setting off our lakes and streams to the best advantage. Wooded shores are preferable to cut-over and desolate water frontages. Areas of woodland here and there offer added attractions to our summer visitors. Shelter and protection are also afforded all forms of wild life. Proper recognition of forest areas surrounding our inland lakes, along our streams, and flanking the Great Lakes and the Mississippi River, will very materially assist us in increasing our importance as a great playground.

We cannot expect to go ahead cutting into our original timber supplies forever. Constructive methods and correct forestry practices must be brought into play, so that definite provision for renewal of supply may be assured. The forest in Wisconsin has always been of importance, and our location and logical development indicates that the forest will continue to be one of our major resources. The State must deal with this resource and with problems affecting it in some proper way.

**HON. A. J. GROESBECK**

Governor of Michigan

**O**F paramount necessity to the State itself as well as of vital economic value to the nation, Michigan must formulate a definite forestry program. To me, as chief executive of this State, the accomplishment of such a program will be one of the most gratifying of my ambitions.

Such a forestry program to be workable and practical must take into consideration the rights of our citizens. Such a program must be built upon a foundation that will insure the rehabilitation of the thousands of acres of devastated and idle lands now within our confines. It must be alike fair to the property owner, the timber operator, the community and to the citizens of this State. It must be a program that will encourage private reforestation as well as the community spirit. It must be a program that will grow trees that will bring back to the State and nation at least that part of its protective forest growth that will insure the perpetuity of the fertility of our lands, the conservation of our waters and the redemption of our wood-working industries.

Michigan must and will have a comprehensive, workable, forestry program. I hope for this during my administration.



# THE FOREST WHERE THE MISSISSIPPI BEGINS

A DESCRIPTION OF THE WOODED AND LAKE-DOTTED TRACT WHERE THE FATHER OF WATERS FIRST SHAPES ITS COURSE TO THE SEA

By D. Lange

Author of "The Lure of the Mississippi"

WHEN an old Spanish explorer, Panfilo de Narvaez, by name, in 1528 sailed past the wide spread estuary of the Mississippi River, what vague and mysterious wonderment must have possessed him? Was it sea or river? If the latter, from whence did it come and what manner of country lay at its far-flung head? For almost three centuries the birthplace of the Father of Waters remained a mystery to the white man while along the winding reaches of its lower course and those of its larger tributaries, fearless explorers, bold Indian fighters and hardy pioneers were pushing the American frontier westward and northward.

There is no mystery today about the origin of the river, excepting the mystery of age-old Indian legends and of the unwritten adventures of the white men who sought out the river's head. The region of a few thousand acres where the Mississippi first gathers its waters and shapes its course toward the ocean is today

a State Forest under the jurisdiction of the Minnesota Forest Service. It is known as Itasca State Park and Forest and is situated some thirty miles southwest of the town of Bemidji. It embraces 32,000 acres, of which 6,000 are water, and was created in 1891 by Congress and the Minnesota Legislature to protect the source of our greatest river.

Here the Minnesota Forest Service has built roads and trails, preserved much of the virgin forest, protected the wild life, made available camp sites and hotel accommodations, and here every summer come thousands of tourists to spend a few days or a few weeks amid the wild beauty of forest bound lakes, shrouded in the interest and charm of a traditional spot. Itasca State Forest is the jewel of Minnesota's state-owned forests. On the shore of Lake Itasca one stands at the cradle of the mighty river, but here its waters are quiet. Its soul is at rest. That is the spirit which pervades.



BEAUTIFUL LAKE ITASCA, THE SOURCE OF THE MISSISSIPPI RIVER, IN ITASCA STATE FOREST—ONE OF THE SUPERB VIEWS TO BE HAD FROM DOUGLAS LODGE, ERECTED BY THE STATE FOR THE ENTERTAINMENT AND COMFORT OF THE MANY TOURISTS AND VISITORS TO THE FOREST.





A LARGE, DESERTED BEAVER HOUSE IN A DRAINED POND ON NICOLLET CREEK. THE POND WAS MADE ABOUT 1906 AND WAS ABANDONED AND DRAINED ABOUT 1910. THE PHOTOGRAPH WAS TAKEN IN 1911. IT IS NOW A RICH BUT ROUGH BEAVER MEADOW, FROM WHICH HEAVY CROPS OF WILD HAY ARE CUT ANNUALLY.

It is a curious fact that the exact source of the Mississippi has been known for less than a century. The honor of having discovered and described to the world the source belongs to Henry R. Schoolcraft, who first saw Lake Itasca in May, 1832. In Schoolcraft's party was Rev. William T. Boutwell, who invented on the spot the name which has become accepted generally for the source of the river. Rev. Boutwell made the name from the two Latin words, "*Veritas caput*," the true head, by taking three syllables out of the two Latin words.

The lake was, of course, well known to the French trappers and to the Chippewa Indians, who occupied the forest country of Northern Minnesota. The French called it Lac la Biche, and to the Indians it was known as Elk Lake. Lake Itasca has the shape of a wish-bone, with two arms pointing south and one pointing north. Its total length is about three miles and it varies in width from about an eighth of a mile to a little more than a mile. It is one of thousands of glacial lakes and it varies in depth from a few feet to about forty feet.

#### Where Beavers Dam the Mississippi

The river starts from the north arm, first flowing north and then east for about 150 miles, before it starts on its long course southward. It emerges from the lake as a small stream about twenty feet wide and deep enough to carry a canoe or rowboat at stages of

high water. But in midsummer it is often merely a small rambling creek, with too little water to float even a canoe or rowboat. It is small enough that from time to time, the beavers, who are now again very numerous in the Itasca forest, build a dam across the infant Mississippi.

There have been many disputes as to whether Lake Itasca is the real source of the Mississippi. There is no use of reviving this old question. For all practical purposes Lake Itasca is the source of our great river, but it is true that there are several small streams and lakes which drain into Lake Itasca. But these streams are so small that in dry seasons they are either mere tiny brooklets, or run dry altogether.

It may be of some interest to give an account of, at least, one of these so-called ultimate sources. The largest of them, going up stream, begins with Chambers Creek, which carries the overflow from a more southerly lake, now known as Elk Lake, into Lake Itasca. Chambers Creek is only about a quarter of a mile long. In seasons of high water, I have several times pushed a rowboat up its course, from Lake Itasca into Elk Lake. In periods of low water the creek consists of a number of separate pools with very little running water connecting them, but it is never entirely dry.

Elk Lake itself is a fine lake of clear water, and deeper than Itasca. On its east side, it is bordered by high banks, which are covered with fine groves of





THE FORESTER'S CABIN ON DE SOTO LAKE, NEAR WHICH THE BLAZED NORWAY PINE STANDS.

Norway pine. Many large cold permanent springs empty into it, and the lake itself reaches a depth of eighty-five feet. It is a glacial lake like all the other numerous lakes and ponds in the Itasca Forest. It is the second lake in size in the park, being about a mile wide and a mile and a half long.

#### From the Roots of a Fallen Tamarack Tree

Into Elk Lake run several very small streams. One of them is known as Elk Creek. A few years ago a friend and I followed this creek to its ultimate source. After we had traced its winding course for a mile through alder brush, tall grass and weeds which formed just the kind of cover in which the doe likes to hide its fawn, the creek became entirely dry, although the channel remained well marked. In a short time the riddle was solved by our coming to a beaver dam about seven feet high. Above the dam extended a large beaver pond about a quarter of a mile in length. We picked up the stream again above the pond, but a few rods beyond it came to an end under the roots of a fallen tamarack tree. Here was at that time the end of the Mississippi as a distinct current.

But through a marsh of sphagnum moss and scattered tamaracks, water seeped into the beaver pond from another small marshy lake still farther south. And this lake in turn is connected by a ditch dug by beavers a long time ago with Little Elk Lake, quarter of a mile to the southwest. No brooks run into Little Elk Lake, which is therefore the absolute ultimate source of the Mississippi. It is a little farther from the Gulf of Mexico, as the river runs, than any other lake or pond that drains into Lake Itasca.

Many of the smaller lakes in the park have neither inlet nor outlet and their water level oscillates about

five feet or more within periods of twenty to twenty-five years. From about 1880 to 1900, these lakes were very low, and a growth of jack pine sprang up along the sandy beaches of some of them and on sandy ridges separating their bays.

About 1906 these isolated lakes reached a high water stage and all the jack pines on their beaches and ridges were killed by drowning, because jack pines cannot live with their roots submerged. This condition was most marked on De Soto Lake. On a ridge separating the main body of the lake from a small bay I found in 1908 numerous dead jack pines about twenty-five years old and large enough to be used in the building of a raft. At the time I cut them they were standing in a foot of water. The fact that they had grown there proves that the lake must have been very low for a period of some twenty-five years. These lakes

seem to be approaching again a low water level, but they are not yet low enough to permit another growth of Jack pine on their beaches and sandy ridges.

#### The Lost Explorers

De Soto Lake is still given on some maps as the source of the Mississippi. The statement is false. The source of the Mississippi as a river is Lake Itasca, and its farthest ultimate source, if one may use the expression, is Little Elk Lake. De Soto Lake cannot



YOUNG DEVOTEES OF THE ROD AND LINE BAITING SUNFISH IN DE SOTO LAKE.



be the source of any river, because it has neither inlet nor outlet. In this respect it resembles many other small lakes in the park, which lie isolated on the height of land between Hudson Bay and the Gulf of Mexico. In 1912 I cut out an overgrown blaze on a Norway pine near the De Soto Lake forester's cabin, and uncovered the following inscription: "A C. HALL'S LOST EXPLORERS."

I have not been able to discover who these men were. Presumably they were looking for the source of the Mississippi and found that the lake on which they were camping was not the source.

These isolated lakes present some interesting problems in biology and change of climate, which have not yet been studied. In the water of one of them I found dead standing trees, which I estimated to be at least sixty years old. De Soto Lake and Morrison Lake, both from twenty to thirty-five feet deep, contained no bass and pickerel within the memory of white men. They have recently



DOUGLAS LODGE IN ITASCA STATE PARK. ERECTED FOR THE COMFORT AND CONVENIENCE OF TOURISTS, IT IS BEAUTIFULLY LOCATED, COMMANDING A SUPERB VIEW OF LAKE ITASCA, THE SOURCE OF THE MISSISSIPPI.

been stocked with large mouthed black bass, which thrive and multiply very rapidly. Can it be that in years past these lakes have at times been so low that the larger fish were frozen out? Both lakes contain several kinds of minnows and sunfish. De Soto Lake, which has excellent sunfish spawning ground, was filled to capacity with sunfish.

#### More Wild Life to the Square Mile

Itasca Park, as the region is generally called, embraces now a square of seven miles. It is, of course, no park at all, but an area of wild primitive forest. It is a refuge for many kinds of game and wild birds, and one can see more wild life in Itasca on a smaller area and with less exertion than in any other region as easily accessible.

White-tail deer are very abundant, others are fairly common. Porcupines are almost too numerous for the good of the forest, and all the smaller northern animals may be found there. Of late years raccoons have come into the park. In 1901 General Douglas liberated three beavers in the park, and the whole park is now so well stocked with them that the Forest Service has been obliged to trap about fifty of them annually, because their number has reached the limit of the food supply.

A herd of about thirty elk is kept in a large enclosure between the two arms of the lake, and it is the plan to liberate some of them in the near future. In fact, two or three of them have escaped. There are no moose in the park, and they would probably not stay if they were introduced. There are a few black bears, although the region is not a very good bear country. Gray wolves occasionally stray into the park from the north, but coyotes have become quite plentiful and will have to be checked.



NORWAY PINES IN ITASCA FOREST, SHOWING INJURY BY A SEVERE FOREST FIRE OF FORTY YEARS AGO.



### A Colony of Blue Herons

Loons and blue herons are the most conspicuous large water birds, and the herons have at least one large colony of sixty nests. It is the intention of the Forest Service to place a number of wood duck boxes around the lakes, because hollow trees are scarce in the park. One year a family of black ducks lived on a secluded beaver pond all summer.

The greatest need of the park is adequate fire protection. The region lies near to the western limit of forests, and is subject to occasional drouths in late summer and fall. The forest is of the mixed northern

character, consisting of white pine, Norway pine, jack pine, balsam fir, spruce, tamarack, white cedar, paper birch, poplar, and a mixture of other broad-leaved species.

Bradford Torrey might well have had Itasca State Park in mind when he wrote—

"Ten thousand things we may have fretted ourselves about, uselessly or worse. But to have lived in the sun, to have loved natural beauty, to have felt the majesty of trees, to have enjoyed the sweetness of flowers and the music of birds—so much, at least, is not vanity or vexation of spirit."

## FOREST POSSIBILITIES OF NORTHERN MINNESOTA

AN INTERESTING ACCOUNT OF SOME STARTLING THINGS WHICH A FORESTER IS FINDING IN HIS STUDY OF CUT-OVER LANDS

By T. Schantz Hansen, Cloquet Experiment Station

ONE evening as we sat eating our supper in front of our camp tents, a big touring car pulled up along side the road and stopped. A heavy-set man, whose eyes were hidden behind brown-colored glasses but whose fleshy face was highly colored from many days driving, climbed out and came over to us. He was from Chicago, he said, and was touring northern Minnesota with his family. He was puzzled about the country. He couldn't seem to make it out. It was too big. There were too many great stretches of barren land. To his eye, unaccustomed to the northern cut-overs, it looked like something had stopped functioning somewhere.

He had become so curious that he wanted to ask some questions. He asked many questions and we told him the story of the land. When we had finished and he could think of nothing more to ask, he took off his brown goggles and wiping them reflectively remarked:

"Well, sir, I thought I ran a pretty big business down in Chicago, but this country up here! I'll say it's a man-sized job."

Bigness of country! Barrenness of large areas of land! These two things above all others impress themselves upon the traveler through northern Minnesota.



TO THE TRAVELER SPEEDING THROUGH BY AUTOMOBILE OR TRAIN THE COUNTRY LOOKED LIKE BRUSH LAND, BUT AN EXAMINATION OF CUT-OVER AREAS SHOWED THAT WHERE FIRES HAVE BEEN KEPT OUT A VOLUNTEER FOREST IS SPRINGING UP.





THROUGH THIS STRETCH OF VIRGIN NORWAY PINE WINDS THE PORTAGE FROM TROUT LAKE TO SAND POINT LAKES, NORTHERN MINNESOTA. THE REGION IS MUCH USED AND WELL POSTED FOR FIRE PROTECTION.



ST. LOUIS COUNTY HAS ALMOST A HALF MILLION ACRES IN LAKES, THE BEAUTY OF WHICH ARE MEASURED LARGELY BY THE EXTENT TO WHICH THEIR SHORES REMAIN WOODED. THIS IS A TYPICAL EXAMPLE.



And yet, it is only a matter of a hundred years since the soldiers at Fort Snelling started the first saw mill in the state. It is less than half that long since the Lumber Industry as we know it began its inroads on the immense areas of pine in the state. In that period of fifty years what appeared to be an almost inexhaustible mine of timber has been depleted to such an extent that the few remaining stands of virgin timber cause comment. In fact, some few sections have been preserved that future generations may know what a wonderful resource this state once possessed.

#### Cut-Over Areas Appear As Economic Millstone

The areas once heavily timbered have been turned into an apparent waste. Comparatively little of it has been

ness and on a dollar and cent basis. One of the most important things in any business is to know the stock on hand. In forestry the stock on hand is timber and land. The latter is easily secured, the former is more difficult, and almost impossible with respect to the younger age classes found on the cut-over areas. The proposition of studying the true condition of cut-over lands by an actual stock taking was started by the Cloquet Forest Experiment Station three years ago. After three years of field work, what seemed like a hopeless and baffling proposition is beginning to show results which are more or less startling. The intensive examination of the cut-over area brings out the fact that things are not always as they seem. The situation is not hopeless, or is it beyond the limit of human endeavor to work out the solution. In



THIS PICTURE SHOWS THAT WHERE FIRES HAVE BEEN KEPT OUT FOR A NUMBER OF YEARS THE VOLUNTEER FOREST BECOMES A REAL FOREST. PROPER PROTECTION FROM FIRE POINTS THE WAY TO REFOREST MILLIONS OF ACRES OF BARREN LAND WHICH IS NOW A LIABILITY TO THE LAKE STATES.

developed into farm land and we have come to regard the remainder as a necessary evil. The vastness of the area involved and its appearance of barrenness makes it seem as though it were humanly impossible to remedy the situation. It might almost seem that we are doomed to have the cut-over areas around our necks forever as an economic millstone.

It is never safe to base opinions on casual glances, especially in such large and important questions as this. It is one of the functions of a Forest Experiment Station to foster forestry. We must consider forestry as a busi-

ness, the outlook is unusually bright and the economic situation will soon be such that the use of our cut-over lands will be solved.

It was necessary to confine the study to a limited area in order that the data could be better applied. St. Louis county was selected because it was typical of the northern part of the state and was easily accessible because of the wonderful road system. It contains vast areas of cut-over lands and some virgin timber. The statistics given here apply to only St. Louis county, but serve to indicate the condition of the entire northern portion of the state.



Statistics in themselves are dry but are necessary and useful tools in shaping ideas and proving facts. In using them we can often forget that they are mere figures.

### A Matter Of Mere Figures

St. Louis county is the largest in the state, in fact, it has a larger area than some of our states; about 4,250,000 acres of which 3,800,000 acres are land, the remainder being lakes and rivers. A rough classification divides this net land area equally into land unfit for farming under present methods and conditions and land fit for farming, or 1,900,000 acres to each class. It would simplify matters considerably if these areas were in compact bodies, but they are scattered here and there with no rhyme or reason. The extent of forest land in this county alone cannot help but impress one with the fact that its very quantity makes it important enough to warrant considerable thought.

We have 1,900,000 acres of farm land in the county. Some of it is as good and rich land as can be found anywhere, some of it is not so good. The census of 1920 shows a total of 93,000 acres of land improved since the time they started improving land in 1855. The rate of improvement will increase, that is granted, but much of the area will raise one, two, or three crops of trees before it is needed for the plow and leave the soil in better condition. This adds considerably to the 1,900,000 acres which we consider as forest land. Remember now we are dealing with one county of this great state and there are at least twelve that fall in this class. Just consider the economic importance of the area.

The method used in this study need not be described here. Altogether 103 sections were examined intensively. These were located in the various surface and soil conditions found in the county. Certain types of land were avoided because as soon as any cutting was done here the land was cleared for the plow. These areas were the old lake beds.

### Something More Than Brush Land

The intensive examination showed the cut-over areas to be in a producing state and not just an area of brush land as a casual glance would indicate. Even in the rock regions where popular opinion has the hills as a rock waste, these hills were found to be in a producing state and not barren. A complete analysis of the data showed only 4 per cent of the cut-over lands to be barren and without second growth. Only 4 per cent of this vast and apparently hopelessly barren areas in urgent need of planting. An area small enough to lie entirely in the realm of financial and physical possibility. What then do we find on these cut-over areas?

On half of the cut-over land we find a stand of hardwoods. Hardwoods in this section mean birch and popple stands with probably a sprinkling of less than 10 per cent of pine, spruce, or balsam. On a quarter of the area we find mixed stands. Mixed stands are those stands of birch and popple which contain more than 10 per cent and less than 60 per cent of pine, spruce, or

balsam in mixture. On a tenth of the area, conifers are coming in. It is rather disappointing to find such a small percentage of the area coming back to the original species, but even that has its bright side. The remaining 13 per cent is swamp and muskeg which was not considered in this study because of its uncertain status and the little that is known about tree growth and the perpetuation of the forest on this type of land.

### Repeated Fires Make Pigmy Forests

It is unfortunate but true that the younger age classes predominate in the stands of second growth. It is rare that it takes more than a year or two after cutting for a stand of young growth to start. In spite of this, the areas cut thirty years ago are rarely ever occupied by stands about thirty years old. The proportion of seedling stage stands in the second growth was large, 78



SOME SECTIONS OF VIRGIN FOREST HAVE BEEN PRESERVED THAT FUTURE GENERATIONS MAY KNOW WHAT A WONDER-RESOURCE MINNESOTA ONCE POSSESSED. IN THIS STAND OF NORWAY PINE THE STATE HAS BUILT COMFORTABLE CABINS FOR SUMMER TOURISTS.

per cent being in this stage. Trees in this stage averaged about 8 feet in height and seven years in age. Twelve percent of the stands were in the sapling stage. The trees in this stage averaged 15 feet in height and 12 years of age. Ten per cent of the stands were in the pole stage, and averaged about 25 feet in height and 25 years in age.

This predominance of younger age classes is due to two factors. The first being that much of the area has been cut over more than once and brush disposal incident to logging has destroyed the young growth. The second factor is the repeated burning to which the areas have been subjected. The progress of fire protection has greatly lessened the danger of repeated burning. We are still far from a complete solution of the fire question.



# EDITORIAL

## PROTECTING THE OUTDOORS

### THE SUMMER TOURIST

A million and a half people, in round numbers, every year invade the States of Michigan, Wisconsin and Minnesota, seeking out-door recreation. There are two seasons for them. In July and August the north country is swarming with summer tourists. They are everywhere—in the woods, on the highways, in, on and around the lakes. They are seeking the best the land has to offer,—fishing, boating, swimming, camping, hiking or just serenely resting in the cool forest. The car from New York is parked under kindly pines beside the car from Oregon along with half a dozen from Illinois and as many more from Iowa. But by the time the September rains are well begun, this army of summer tourists is largely gone.

### ENTER THE GUN SPORTSMAN

When the Indian summer creeps down from the north and the ducks begin to fly overhead and the game seasons for fowl, deer and small fur-bearing animals open, another army of travelers—the gun sportsmen,—sweep up from the south and in from the east and west. The woods resound with the bang of the shotgun and the ping of the rifle. The game becomes restless, wary and on the move. By Christmas, the season's bag is well filled and the second army of invasion has retreated.

### A FORTUNE FROM TOURIST TRADE

These recreational visitors leave annually upwards of seventy-five million dollars in the three States. The amount is on the increase. The tourist trade has become a leading industry in the north country. It is upbuilding the railroads and the highways of the back country. It is dotting the lake shores with hotels and summer lodges. It is pulling many a farmer through lean years pending the development of new land. It is saving many a merchant and many a county from bankruptcy. It is remaking the north country.

### CAPITALIZING NATURE

No need to ask why this army of a million and a half Americans from distant States, with money in their pockets and buoyant anticipation in their hearts, seeks the north woods country. The traveler in search of recreation is attracted by what nature has to offer—by its woods, its lakes, its fishing, its game, its roads, its camping spots. Rich in the historic glory of vast forests and innumerable lakes, this north country has long been famous as a tourist land. The States are now capitalizing as they have never done before what is left of their natural resources. They are advertising them throughout the nation, forming tourist and summer resort organizations, building wonderful roads, seeking to conserve the

game and fish by man-made laws. Between States a lively competition has developed.

### TIME FOR SERIOUS THINKING

In view of what is taking place and of the possibilities of making this north country many times larger and more attractive as a pleasure land, we think it is time to give a little serious consideration to a few fundamental elements in the undertaking. Seventy-five million dollars annually from tourist trade! Figured as a six per cent return, the valuation of the capital investment amounts to \$1,250,000,000. Add the value of the game and fish taken each year, the internal recreational trade created, the returns from lumber, pulpwood, poles, posts and firewood, the capital investment assumes a value of over five billion dollars. An investment surely worth thinking about!

### LAND, FOREST AND WATER

Land, forest and water constitute this investment principal. What is the guaranty of its stability and permanence? Ordinarily we think of land as something permanent and without land there can be no forests and no lakes. But land alone, barren and unwatered, is a desert. Spot the barren land with twenty thousand lakes with barren shores and it still remains a barren, shadeless, monotonous country, lean in game, fish and natural scenery. It has no voice to call the tourist or the sportsman from distant lands.

### FORESTS—THE PILLAR OF PERMANENCE

But to the land with its twenty thousand lakes, add a fair proportion of forests and the country at once becomes transformed as completely as dull rock is transformed by the glitter of traces of gold. The heart leaps at the sight of it, even at the telling of it. In the mind of the recreationist, the forest mirrors game, birds, flowers, trails, cool shade, restful places, beautiful roads, wooded lake shores, and shadowed waters where the fish gather on hot days. Of the three—land, forest and water—the forest is the pillar of permanence and stability, upon which recreational development in the lake States rests today and in the future. There is no theory or argument about it.

### A LOAN FROM NATURE

Years ago, nature loaned the lake States a magnificent forest—one of the finest in the world. That the States felt no obligation to use the borrowed capital with wise foresight is common knowledge, written large across the face of the north country. With it, they built a large lumber industry and hastened the development of their commonwealths and of those to the south, west and east. That was right and inevitable, but the manner of doing it left the debt but half paid. There remains outstanding



forty million acres of treeless barrens and here and there a small balance of old virgin forests.

#### THE LIMITING FACTOR

The lumber industry now is nearly gone and on the depleted remains of that original forest capital the lake States are seeking to build a great national playground. The time has come for them to consider what has happened in the past in terms of what may happen in the future. The forest is their limiting factor. Sooner or later, they must face the fact that their depleted forest capital still is shrinking and the foundation gradually is slipping from under the rising temple of their greater outdoors.

#### THE CURSE OF THE NORTH

What is being done to check the forest loss? In each of the three States, forest protection and forest reconstruction has been booted about politically for years, choked here, throttled there and fanned alive when necessity arose. As a result they trail far behind other public work. Fires—the curse of the north country—continue to consume thousands of acres of growing timber, furnishing flaring headlines of exaggeration in the newspapers and frightening tourists from the country; lakes continue to be drained, increasing the fires and routing

#### FOOLISH IDEAS

Some people still have the idea that foresters want to make every piece of raw land they clap their eyes upon into a forest. A foolish idea, of course, but not uncommon in the land clearing States of Michigan, Minnesota and Wisconsin, where agricultural propagandists have boomed every likely crop but timber—the one crop the States are now most in need of. Public understanding of what forestry actually contemplates is surprisingly at loose ends in many minds. There are those who are against forestry because they believe forestry and agriculture are enemies. There are those who still believe that a state or national forest having been set apart, a high fence would be built around it and the public kept out. There are those who are for forestry in principle but who have been led to believe that it is impracticable to fit it into the scheme of progress. And so on.

#### THE MISSING CROP

The effect is the effect of ignorance, reflected in the small amount of progress which these States have made in forestry during the past decade. Agricultural development has been the cry, but it has been an agricultural program without a timber crop. Propaganda started years ago by conscienceless land speculators whose stock in trade is cheap cut-over lands, has been a large factor in stifling forestry and in confusing the public mind as to its proper place in State development. Fortunately, the States have made much progress in throttling this type of operator, but in advancing the use of land for

the game; reforestation proceeds at a slow pace although the success of planting has been repeatedly demonstrated.

#### STATE APATHY

Minnesota, which leads the States in actual forest progress, grudgingly appropriates \$125,000 for its Forest Department, of which eighty per cent is spent for fire protection, when it should provide a sum three or four times greater. In Wisconsin, forestry is practically at a standstill. The State is spending \$15,000 for fire protection and trusting to luck that it will not awaken some hot, windy summer to a great conflagration and another great blackened blot on its northern landscape. Michigan with less than a hundred thousand dollars has thus far failed to lift the mortgage from its forest land counties.

#### EXPERIENCE AND ITS LESSON

Thus inadequate action continues to eat away the forest balance while the States hasten to capitalize the vanishing remains with large programs of road building, game propagation and recreational development. A great industry—lumbering—rose and thrived in the Lake States and then it collapsed because men had ignored the decisive factor—the forest—in the capital investment with which the industry had been built.

Are the Lake States going to repeat the mistake?

## WHERE EDUCATION IS NEEDED

specially adapted crops they have made relatively little progress, so far as land suitable only for growing forests is concerned.

#### LAKE STATES FORESTRY

Both Michigan and Minnesota give forestry courses at their agricultural colleges and excellent work is being done with the small amount of money provided. But the departments are inadequately supported financially to permit the State wide extension work needed to give the forest its economic place on the land. In Wisconsin, at the State University at Madison, forestry is tucked away in one little course of two lectures twice a week for one semestre. And this is in spite of the fact that, according to the last census, the farm woodlots in Wisconsin, yielded \$16,500,000 worth of forest products in 1919, a crop value exceeding only by that of corn, oats, hay and clover, and potatoes and that on Wisconsin farms timber ranks first in acreage.

#### GIVE THE FOREST ITS PLACE

In a recent speech, Secretary Wallace of the United States Department of Agriculture, said: "Timber is a crop; one of our most important crops. It grows, ripens and becomes ready for the harvest just as other agricultural crops. It should be harvested in season and another crop grown for the use of future generations. It must be protected from fire, from plant diseases, from insect pests, just as other agricultural crops are protected. That requires the services of the horticulturist, of the entomologist, of the plant pathologist and of the forest



specialist, all of these men being specially trained in their own lines, working together in closest co-operation."

Coming from so eminent an authority, does not that

put it up to the agricultural colleges to give forestry the place in their educational activities which the interests of their State demand?

## THE COMMON ENEMY

### THE MAKER OF IDLE LAND

Forest destruction breeds forest fires. In a dense forest the coolness, the shade, the surface litter of decaying vegetation, all hold the native moisture. The hot sun filters through the leafy canopy in slender shafts that scarcely temper the humidity; the drying winds are checked. Only a prolonged drought can make the forest highly inflammable. With the timber cut, all this is changed, the canopy is gone, the sun now reaches the surface litter and dries it out. The debris from cutting seasons quickly, each resinous branch a potential torch. Days or weeks elapse without rain and the kindling is ready for the first chance spark. Once ignited, it burns fiercely and fast. Scattered vegetation in its path is killed but not consumed, and remains to dry out and provide fuel for another fire. Repeated fires reduce the vegetation to the poorest of weeds or brush, and an area has been laid waste, with only charred stumps to show what nature once produced there.

### WHY BURNS REMAIN BURNS

If a waiting settler could turn this clearing to account, and build in the ashes a productive farm home, the manner of clearing would be less important. All honor to those hardy farmers, who in our modern times, typify the pioneers. But in nine cases out of ten, there is no wait-

ing settler. The land which has escaped clearing for generations is often fit for no crop except timber. And so, almost always, the burned area remains only a burn, to be added to that desolate region of blackened stumps and tangled briars which forms the idle land problem in the Lake States.

It is unthinkable that an area which in the aggregate is as large as the State of New York should remain idle, or even in a condition of low productivity. Experience more and more points to the fact that much of it will reach its highest usefulness in growing again the forests it formerly supported. And since fire is chiefly responsible for the idle land problem the greatest step in the solution of that problem will be the control of fire.

### HELP NATURE AND NATURE WILL HELP US

As long as a region is subject to inordinate fire hazards, there is little chance that a timber crop requiring fifty years or more to mature will long survive. No grower of timber can take the chance. We must reduce the fire loss before forestry can find the business basis which will make it successful. Yet curiously enough, if we had well stocked forests in place of slashings and old burns the forest fire menace would become relatively small, for the dense green forest protects itself. If we help nature to establish forests nature will help us in fighting the common enemy, fire.

## MICHIGAN'S LAND SURVEY

### A PROGRESSIVE UNDERTAKING

One of the most encouraging and at the same time most progressive steps yet undertaken in land management is that contemplated by the State of Michigan. It is a Land Economic Survey, the object of which is to gather for each county the information needed to direct the development of land and other natural resources along sound economic lines. The survey is to be in the nature of an inventory of resources and a determination in so far as may be possible of how land and water may be put to its highest use.

The project is already under way, having been started during the past summer by co-operative financing on the part of the State Departments of Conservation and Agriculture, the Michigan Agricultural College and the University of Michigan. The executive direction of the work has been assigned the State Geologist. Field crews completed Charlevoix County this summer, studying and recording information on land types, soil values, land uses, forest conditions, recreational development and possibilities, fish and game, water power, forest fires, taxation problems, etc. In order to continue the work to include other counties of the State, the Legislature will be asked for an annual appropriation of \$200,000.

### THE STRENGTH OF THE SOIL

There is probably no State in the union more in need of such a survey than Michigan. Many parts of the State have been for years and still are going backward because of misuse of land. Many counties, it is said, are bankrupt or nearly so and land is reverting to the State at the rate of 100,000 acres a year for non-payment of taxes. Yet all of this land has value if put to its proper use. What is it best suited for? If not for agriculture now or in the near future, what is its value for forestry, recreation, wild life or some other economic use? And how can its proper utilization be brought about? The survey, it is expected, will answer these questions and thus provide an intelligent and comprehensive basis for Michigan's development.

### THE INCENTIVE TO PRIVATE REFORESTATION

"Any policy which does not provide for economic utilization of all land is inadequate," says Michigan's director of Agricultural Development. "It would be fortunate if it could be shown to the owner that he might expect a fair return from growing trees as a crop. It would permanently prevent



# MICHIGAN'S FIGHT FOR FORESTS

By P. S. Lovejoy

Secretary Michigan Forestry Association

A REGULAR historian would have to begin at the other end, but the fact is that Michigan is setting the pace for the nation in matters of land economics. That is curious, too, for decade after decade Michigan has been the favorite hangout for the sand-land swindlers, the boomer and the forest fire. But perhaps economic diseases develop their own anti-toxins. If so, perhaps Michigan's sudden change may be explained. A third of Michigan is virtually or actually bankrupt. Many other states are in like shape; but Michigan admits it.

## "No Hokum At All," Says Governor

In any case, having listened to the heads of State Departments and Bureau Chiefs, and having checked through their detailed and interlocking plan for the

stopping at every house to find out whether it was occupied, and if so, how the occupants happened to be there and how they were getting along; and how far it was to school and water; and asking what had become of the people who used to live in the empty houses; and how long since fire had been on the hill; and kicking old stumps to find out what sort of forest had originally been on that land, and marking in on the tally sheets what sort of forest was there now—if any at all, and what sort of forest was apt to be there in fifty years; and comparing what they found on the land with the records in the courthouse; taking inventory of land affairs—from deer sign and trout to the area of farms in alfalfa and the assessed value of virgin basswood. Perfectly real; in Michigan; just



WHAT HAS BECOME OF THE FAMILIES WHO ONCE LIVED ON THESE FARMS, NOW DESERTED? THERE WERE THOUSANDS OF ACRES OF ABANDONED AND BANKRUPT LAND AND WITHIN TEN YEARS THE STATE HAD LOST 10,500 FARMS AND A BILLION FEET OF LUMBER WAS BEING IMPORTED EVERY YEAR.

reclamation of Michigan's idle lands, now amounting to some 12,000,000 acres, it seemed too good to be true. So I went in and asked Governor Groesbeck about it. This was a campaign year, I said. And how much of all this program stuff was real and bona fide administration policy and how much of it was campaign hokum?

No hokum at all, the Governor told me. And, yes, it would be correct to state that the Governor would take the essentials of the big idea out on the stump this fall: Inventory-survey, fire control, farm and forest development. And, yes, the facts were uncomfortable—but not to be denied. Time to go straight.

Up in Charlevoix county I saw the crews of the official Soil and Economic Survey quartering the country, mapping soil and topography and cover;

as the professors of the Michigan Academy of Science had recommended in 1920. Astonishing.

On the oldest State Forest where, in 1905, we students had dragged our clothesline surveyor's chains through the scattering brush for \$20 a month, I saw whole forests of popple and oak and pine, almost merchantable already; saw a hundred miles of rod-wide, tractor-made fire lines blocking the quarter and forty lines, and lookout towers sticking up every few miles; thousands of acres of hand-set pine, doing nicely; one of the biggest forest nurseries in America, with a seed-extracting house in one corner and a concrete reservoir, under ground, as big as a church and filled by a hydraulic ram.

In Lansing the Secretary of the Conservation Department spread out a chart bigger than his desk and



argued with me as to the stumpage increment reasonably to be expected during 60 years, and whether the planting of 100,000 acres of pine a year would be enough.

### The Commissioner Stands Up In Meeting

The Commissioner of Agriculture stood up in meeting to demand that the lumbermen, foresters and tax experts fix up the timberland tax laws so that a land-



WHERE FOREST SCHOOL STUDENTS IN 1905 DRAGGED A SURVEYOR'S CHAIN IS NOW A FOREST OF POPPLE AND OAK AND PINE.

owner might have a decent chance to grow a crop of timber on lands not yet profitably available for farm crops. And the head of the Conservation Department stood up in meeting to say that the fires must be stopped, and the fire chief said that half a million dollars a year would not be too much to do the job.

Then the lumbermen and farm-bureau and development men, and the foresters and colonization agents and professors all said "Amen" and the ayes had it, and it was so ordered. In Michigan, June, 1922. Astonishing.

How all that happened to happen is the history of it, I suppose. But the regular historians like to handle it cold and this is hot stuff; so it has to be handled irregularly and all that it proves is that the Automatic Fool Killer is still working.

Charles W. Garfield, of Grand Rapids, went broke in the nursery business, but remained interested in growing trees while becoming a big banker, State Senator and so forth. Way back in the nineties he tried to persuade the Agricultural College to teach some forestry, but he couldn't sell the idea. So he tried it on the University, but without much chance of success.

### The Cowpuncher From Texas

It happened, however, that Professor Spaulding of the University's botany department had promised Dr. Fernow to write a monograph on the white pine, Michigan being that pine's favorite state. But in trying to write a monograph for Dr. Fernow the professor bit off more than he could chew. Luckily he was able to wish off part of the work on one of his advanced students, named Roth, recently a cowpuncher in Texas who had pointed north. So Dr. Fernow met young Mr. Roth and presently took him to Washington to get him properly indurated. Leaving Washington for the young Mr. Pinchot to untangle, Dr. Fernow and the now Professor Roth started the new school of forestry at Cornell.

Senator Garfield and his associates somehow found a way to reach the University authorities, and, when the New York legislature in 1902 ditched the Cornell school, Professor Roth came back to Ann Arbor to open a department of forestry; his equipment in 1903 consisting of some warped calipers, a set of Schlich and a part-time botanist.

Attendance at the school grew distressingly fast, even though the Agricultural College soon opened another school of forestry. Besides running his department and teaching a dozen courses, Professor Roth was traveling the state, winter and summer—for many years wholly at his own expense—addressing any audience which would give him a hearing. Practical business men and their organizations were not much interested, but the Women's Clubs were all jazzed up by the new conservation gospels.

As Professor Roth camped on the trail a lumberman would now and then approach, nibble a little, snort, and disappear into the dense political brush.

By this time many isolated individuals and organizations had begun to affiliate to promote forestry, and the Pinchot-Roosevelt period was opening. By 1905 the Michigan Forestry Association was organized and the Women's Clubs had badgered the legislature into creating a Forestry Commission and into designating two ragged little chunks of devastated and tax-reverted land as "Forest Reserves."

### Six Hundred Dollars and a Title

As Forest Warden with a salary of \$1,000 a year, Professor Roth and his student crews found enough down cedar in the old burned swamps to make the "Reserves" almost pay their way. As head of the University's forest department he was meanwhile really quite up against it for help with the teaching. The regents having finally allowed \$600 and a title, the head of the department assigned his salary as State Forest Warden and Assistant Professor Mulford appears on the scene.

The Forestry Association was now active and important. Its resolutions year after year dealt with fire, taxation, devastation, land policy, deficit in forest



products, woodlots, and the exploitation of alleged farm lands, in phrasing still pertinent for most states and for the nation. The Association's efforts concentrated on fire and the state's methods of handling the tax-reverted lands thrown overboard by the lumbermen. The resolutions of 1907 recite that within five years over 800,000 acres of such tax-reverted lands have been sold by the state for about a dollar an acre, have been bought for the little timber left on them, skinned and thrown back to the fires and the repeddling agencies of the State Land Office.

### "Let Them Theorists Rave!"

In 1908, at Battle Creek, the Association staged a protest meeting against the Game, Fish and Fire Warden, alleging incompetence and negligence. Such imputations were stoutly denied by the Lansing worthies who promptly pointed out that the legislature had always regarded game and fish policing as more important than fire and that the appropriations were wholly inadequate for either line of work. Why blame the officials when the system was at fault?

They got away with it. They continued to get away with it until about 1919. First they pretended that they were doing "everything possible with the funds available"; then they wrote fire reports which preposterously minimized the damages done by fire. Having killed their case in advance, the fire appropriations remained inadequate and the old alibi was good for another year. There was much mean work in fighting fire, but in the game and fish organization was considerable pie: "Let them theorists rave on!"

The 1908 fire season was very bad and the losses were tremendous and included the town of Metz. The Fire Warden's report for that year is a curiosity even among Michigan fire documents. Over 2,000,000 acres are acknowledged to have been burned over. Total damages are put at about a dollar an acre. "Benefits" from the fires are solemnly listed, county by county and total a quarter million dollars. The land has been made easier for settlers to clear! A chapter on "Extravagant Estimates of Damages" attends to Professor Roth and the Forestry Association campaigners by suggesting that such reports were written "from a parlor car on a fast train or a first-class hotel." Anyway, the Fire Warden notes, the fires of 1871, 1881 and 1894 were a whole lot worse than those of 1908—so there! A single well hidden paragraph vaguely suggests that perhaps a better fire-fighting organization will sometime become available.

With all its drums beating, the Forestry Association attacked the next legislature and succeeded in getting appointed an official "Inquiry Into Tax Lands and Forestry." The report is a queer hodge-podge of unsupported allegation and poignant fact. The state's land affairs are rotten, it is charged; graft and the exploitation of agriculturally worthless lands and timber-skinning have become notorious and intolerable.

### Insiders Spike the Forestry Bill

The Forestry Association put in and urged a bill. The old-line insiders spiked that bill and let it go through. The Public Domain Commission, consisting of Secretary of State, Auditor General, Superintendent of Education and representatives from the governing boards of the University, Agricultural College and School of Mines, is created and given jurisdiction over state tax lands, state forests, waters and immigration. Game, fish and fire administration remains in the hands of a Governor-appointed warden. The law required that the Commission maintain at least 200,000 acres of state forests.

The Forestry Association was inclined to regard the Public Domain Commission as its legitimate child and seems quite to have expected to take it by the hand and lead it into pleasant places. But the event was quite otherwise. Having absorbed the functions of the old Forestry Commission, about the first thing the new Commission did was to lay off the State Forest Warden and all his works. A crisis was precipitated in the affairs of the University's forestry department. Professor Mulford resigned to accept the chair of forestry at the new Cornell school. Professor Roth was left to teach a hundred students single-handed. The Forestry Association became disgusted and let that be known abroad, but nobody of any importance seems to have cared a bit.

Then Professor Roth resigned to return to Cornell. The regents calmly attempted to find a successor, discovered something as to the standing of their forestry



THE GAME AND FIRE WARDEN HAD DISCOVERED THAT THE GAME AND FUR ANIMALS ABSOLUTELY REQUIRE GREEN FOREST COVERT.



department and hired back the man who created it, giving him facilities for enlarging his staff and equipment. This was in 1912.

Lansing and Ann Arbor were now hardly on speaking terms. After having been well slapped by its thankless progeny, the Association decided to wait watchfully. Besides, it had strained itself in its attack on the legislature and a secretary had been careless in acknowledging receipts. Ann Arbor was writing books and teaching. Grand Rapids was banking. Detroit was practicing law. The Association flag remained at half-mast.

Things seemed to have gone to pot. To the consternation of the regulars, the Commission employed a Biltmore graduate, called him State Forester, set him well out in the Roscommon sands and pretty much forgot him. To the horror of the faithful the Commission had taken as its secretary and active executive an ex-State Land Commissioner, the law setting up no specifications as to this officer, save that he should have "a good general knowledge of Michigan land laws."

### The Dark Age In Michigan Forestry

The dark age of Michigan forestry lies between 1910 and 1915. Of it little is to be recorded, save that the Public Domain Commission appears to have given adequate attention to the leasing of the St. Claire flats, and discharged its obligation *in re* agricultural development by printing an ornate bulletin called "Michigan—The Land of Plenty." Whenever the Commission tried to get a little more money out of the legislature, the Association started its hammer again, and with some effect. Once officers of the Association having sent the legislators personal communications entitled "Friends of Forestry Take Notice," Lansing moved mysteriously and a University President requested a Professor of Forestry to kindly lay off a spell—at least until the appropriation for the new science building might be safe.



THOUSANDS OF ACRES OF HANDSET PINE SUCH AS THIS, AND DOING NICELY, ON THE OLDEST STATE FOREST IN MICHIGAN.

Finally the deadlock having become about complete, in 1915, after delicate negotiations between Ann Arbor and Lansing, the Commission and the Association came into tentatively amicable contact. As the price of burying the hammer the Association demanded that the Commission promulgate something in the nature of a general plan or policy.

Hesitatingly the Commission permitted its State Forester to blueprint a 60-year planting plan for the State Forests, now grown to some 400,000 acres. This plan was given the University foresters for consideration. Other careful negotiations having been successful, Lansing exchanges party calls with Ann Arbor and presently dares invite Ann Arbor to inspect the State Forests. The inspection disclosed a large and excellent nursery, great blocks of successful plantations, and the first real system of permanent fire-lines in America. To all this Ann Arbor joyfully certified. Thenceforth Ann Arbor was permitted mild suggestions as to the conduct of state forest affairs. The Commission presently did a radical thing and set a minimum price on tax-reverted lands and refused to dispose of them unless of somewhat agricultural character.

### The Fire Warden Makes Some Discoveries

The legislature of 1914 had inadvertently advanced the cause of land economics very materially. The term of the Game, Fish and Fire Warden being about to expire and the legislature being Republican, whereas the Governor was a Democrat, there was great jeopardy. By fast and clever work the Wardens had gotten themselves transferred to the jurisdiction of the Public Domain Commission, thus getting land and forest affairs into much sharper focus than before. By 1916 the Game and Fire Warden had made and published three discoveries: 1—That "brush" if unburned, often turned out to be young forest, and young forest, if unburned, might become merchantable; 2—That game and fur animals absolutely required green forest covert; 3—That a lookout tower had been erected.



By camouflaging the Ann Arbor elements involved in 1913, the state fire authorities had been coaxed into accepting federal fire funds under the Weeks Law, but for a number of years the Forest Service inspector's reports had been delicately calibrated to the comprehension of the local officials. But by 1919 the local incompetence had become too hard to overlook—and the fires had been very severe. The inspector's report for 1919 was unusually candid. The Michigan fire organization was a rather sad affair. Lansing has failed or refused to back up its own field chief.

Lansing was very irate over such treatment at the hand of rank and theoretical outsiders and was quoted to the effect that the only new fire law needed would be one to "keep that ——— government inspector out of the state." But it was too late. Suddenly the old machinery and the old-timers found themselves "in wrong," and didn't at all know why or what to do about it.

From Washington was coming a great new campaign for an adequate national forest policy.

#### Enter The Detroit News

The Detroit News, disturbed over the prices of pulp, had learned that with ten million acres of the state in idle forest land fit to grow pulp, even a great newspaper organization might not dare undertake growing its own raw material on its own lands in its own state. Fires and unjust timberland tax laws would make it too hazardous. A third of the state was skidding into bankruptcy. A sixth of the state was owned by some 30 land concerns. Within ten years the state had lost 10,500 farms. A billion feet of lumber was being imported every year, with freight bills alone as great as the cost of growing local timber. Thousands of acres of abandoned and bankrupt land were coming back to the state every month and at increasing rates. These things the News broadcasted in a great campaign. Lansing was uncomfortably aware that the News had not published all it might.

Development bureau and chamber of commerce secretaries were beginning to note the fire damaged soil, that range stock could suffocate in smoke and that tourists did not spend cash for foul air and roads blocked with burning snags.

A national farm journal of great circulation was commenting at length on north Lake State affairs; a lecturer of the State Grange was listing the articles for assigned reading.

#### Lansing Casts Overboard A Jonah

To all of this official Lansing reacted uneasily, hopefully casting overboard, from time to time, first a Jonah and then a piece of pie. What the dickens? What's got into 'em, anyway?

With the advent of Governor Groesbeck, in 1920, came a great shakeup and consolidation of offices. Departments of Conservation and Agriculture were created, the head of each directly responsible for all the activities under him and directly responsible to the Governor. A Conservation Commission, presumably to act in advisory capacity to the Director of Conservation, and successor to the Public Domain Commission, was provided. Its Chairman hailed from the Saginaw district. Its Secretary hailed from the Saginaw district. The Director of Conservation, ex-Game, Fire and Fish Warden, was chairman of the Republican committee of the Saginaw district. All Game, Fur, Fish, Fire, state land and State Forest affairs now became concentrated where responsibility for their administration could not be escaped. Everything began to co-ordinate most harmoniously.

But only began. Like a comet flaming among the old and drowsy constellations of Michigan conservationists, came James Oliver Curwood, of Owosso, author and playwright, urging the sportsmen of the state to arise and assert their rights. Protest meetings were held, headlines flared in half the front pages of the state, threats of libel suits reverberated through the press and the Governor's personal attention was invited to the matters in issue. And just as election campaign was about to open, too.

On the heels of all this unprecedented motion came Harold Titus' novel, "Timber," with official Lansing pictured true to life and fire and tax affairs made real and understandable.

Now, drat these professors and writers, anyway!

Well, if you can't lick the opposition, next best thing's to absorb 'em. Savonarola had no typewriter.

## CHRISTMAS TREE PLANTATIONS

ON a subject of intense, perennial interest—Christmas trees—the Michigan Agricultural Experiment Station has issued a bulletin by A. K. Chittenden, from which the following excerpts are taken.

In order to determine the practicability of growing Christmas trees as a farm crop, the Department of Forestry of the Michigan Agricultural College established an experimental Christmas tree plantation at East Lansing in 1909. Sufficient time has now elapsed to warrant definite conclusions being drawn from this plantation.

The area devoted to the experiment was 0.28 of an acre. . . .

Four-year-old Norway spruce transplants were used. These trees at the time of planting were about 1.4 feet high, good, strong, sturdy stock. They were planted with a triangular spacing of 3 feet, at the rate of 5,584 to the acre. The marking was done by a horse marker.

The plantation was cultivated three times during the first season. No hand work has been done since the planting. Two cultivations were given the plantation



during the summer of 1910. Since that time the area has received no cultivation of any kind. The time required to cultivate the area once over was about  $2\frac{1}{2}$  hours for one man with single horse.

Thinnings were first made along the south and west sides where the soil, being much deeper and of better tilth, enabled the trees to grow more rapidly. The two outside rows along these sides were thinned to about every other tree in 1913. The largest trees were taken out and consequently the removal was not entirely uniform. In 1914 further thinning was made generally over the area. Wherever a large tree appeared to be crowding the ones around it, it was removed. About 350 trees were removed in 1913 and 100 in 1914. In 1915 three hundred trees were taken out. All of these trees taken out in thinnings were trees that could be disposed of to good advantage. . . .



THE CHRISTMAS TREE PLANTATION.

The trees grew rapidly for the first three years, until the roots reached the clay subsoil, when a decided falling off in growth took place. This falling off in height growth at such an early age is not characteristic of the Norway spruce which is one of the fast growing trees. Norway spruce in nearby locations where the surface soil is deeper have maintained a uniform height growth of about one foot per year. It may safely be said that the slackening in growth in this plantation was due to the clay subsoil near the surface. . . .

For Christmas tree purposes too rapid growth is not desirable. If the trees grow faster than one foot a year they become spindly. The best Christmas trees are those which have grown rather slowly. They are bushier and better shaped than very rapidly grown trees.

For a land owner who is located near a good market, the growing of Christmas trees promises to be a profitable industry. There is a steady although limited demand for such trees. Christmas trees are now obtained

principally from the forests, usually at a considerable distance from the cities. They are shipped by the carload from the spruce and fir forests of Michigan, New York and Vermont, and with the depletion of the forests of the country the supply of small trees for this purpose will probably decrease.

Christmas trees can be grown on any farm in Michigan. Norway spruce is the best tree to plant for this purpose. It will do well on almost any soil of good tilth. It grows rapidly, the branches stand out well from the main stem and it makes a beautiful tree. The best size for Christmas trees, the size for which there is the greatest demand, is from four to eight feet tall. Such trees can be grown in five to six years if good strong transplants are used. . . .

In setting out a Christmas tree plantation it is best to use good strong transplants, such as may be obtained from forest nurseries. There is considerable difficulty attached to raising the trees from seed, but if transplants are used this difficulty is avoided. The seedlings grow very slowly for the first two or three years and need considerable attention, but after they have been once or twice transplanted, as would be the case in good nursery stock, they grow rapidly.

Four or five year old transplants are best. Such stock should be from ten to eighteen inches tall. The trees should be planted with a triangular spacing of three feet each way, requiring 5,584 trees to the acre. . . .

The best time for planting is in the spring as soon as the snow is gone and the frost is out of the ground. A regular spacing should be used as it makes cultivation easier and the trees will have uniform growing space and will be more shapely. In planting, two men work together to best advantage, one man to dig the holes and the other to carry the trees and plant them. The holes should be slightly deeper than is necessary to take the roots when spread in a natural position. Fine moist earth should be sprinkled over the roots and the coarser soil drawn in next and packed firmly with the foot. A layer of loose soil should be scraped around the tree in order to retain the moisture. Great care must be taken in handling the stock in the field to see that the roots do not dry out. They should not be exposed to the sun or wind. It is a good plan to keep a piece of wet burlap over the roots when moving the plants. The roots should be thoroughly puddled just before planting, that is, dipped in a thick mud of such consistency as will stick to the roots.

The plantation should be cultivated occasionally for the first two years, to keep down the weeds and prevent early surface rotting and evaporation. Such cultivation will pay for itself in increased growth. After the first year the trees should grow about one foot a year. When the trees are about four feet high, which, if four-year transplants are used, will be in four years, they may be thinned out in order to prevent their crowding each other. By thinning them out the remaining trees will have more room to develop side branches and intermediate returns may be obtained from the trees taken out. This thinning is not necessary, however, as the trees will not crowd badly for some years.



# "REINDEER IN MICHIGAN"

By Albert Stoll, Jr.,

Secretary, Conservation Commission of Michigan

"REINDEER for Michigan?" "Another good man gone wrong." "It can't be done; they'll starve to death; wrong kind of food, no reindeer moss in that State and then the hot summers will wipe them out." "Just a waste of money and another fool experiment." "We don't want to discourage you, but reindeer will not live and thrive in a temperate climate. Their's is a home of snows, hills and mountains. A land covered with moss. The Federal Government's experiments and those of Stefansson in the barren ground ought to convince you of this."

When the Norwegian steamer Bergensfjord tied up at her wharf in New York City, March 10th of this year, the rather skeptical crowd of interested reindeer experts were there to greet her, for on board were 60 Norwegian reindeer consigned to the Department of Conservation of Michigan and forming the nucleus of an experiment in reindeer propagation in that State. Of course, one expected to hear such remarks as "it can't be done"—for it never had been done. However, in the face of the most discouraging advice the De-

partment of Conservation decided the experiment at least would be worth while.

## A Promising Lot Of Animals

Here was the State with literally tens of thousands of acres of cutover land; land lying idle; land upon which agricultural experiments had proven a failure; land that in part had been used in attempting to raise sheep and fatten stock, but land that for six months of the year was snow-covered. Stock raising had not proven a success and winter feeding proved too expensive, so then here was an opportunity to introduce into these lands of Michigan, an animal semi-domesticated; hardy and fully capable of taking care of itself twelve months of the year.

Quite true, no successful experiments had been conducted in propagating reindeer in a temperate climate, however, this was no reason why it should be doomed to failure before the attempt was made. It was no reason why the succulent grasses and wild forage crops of our Northern Peninsula would not raise to healthy



THE HERD OF SIXTY REINDEER IMPORTED FROM NORWAY TO MICHIGAN LAST MARCH IS TODAY A FAMILY OF EIGHTY-ONE, AND A FINER LOT OF ANIMALS CANNOT BE FOUND ANYWHERE. THIS PICTURE SHOWS FIVE YOUNG REINDEER BORN IN MICHIGAN AND THEIR FATHER, IMPORTED FROM NORWAY.



maturity any food or game animal. We had been told that reindeer would not live unless they had an abundance of the so-called reindeer moss. This may be true, but the 60 reindeer that arrived from Norway on March 10th, today is a herd of 81 and a finer lot of animals will be found no other place in the country.

The Department of Conservation of Michigan has every reason to believe that the propagation of reindeer in Michigan will be successful and we predict that within the coming ten years a number of far-sighted businessmen will enter this industry in making use of the so-called idle acres of this State.

#### Reindeer Industry Most Important In Norway

The herd of 60 reindeer originally imported into this State from Norway were purchased at a price of \$125.00 each. The herd consisted of 50 cows and 10 bulls and were secured through Dr. Hafton Christiansen, who is engaged in the reindeer industry in the Norwegian countries. Dr. Christiansen and two native Laplander boys accompanied this herd from Norway to their destination. Dr. Christiansen said, on his arrival in Michigan:

"There is no reason to believe other than the reindeer will do well in your State. You recognize that in our country they represent our most important industry. This is particularly true in the northern sections among the Laplanders and I believe the native Laplander has no superior as a reindeer herder and breeder. There seems to be something almost uncanny in their success and care of these animals. The reindeer is food, clothing and life to these people. When a Lap has a herd numbering from 200 to 600 reindeer, he is considered a poor Lap because a herd of that size will take care of his own immediate needs and those of his family. However, when his herd reaches 1,000 in number, he is then considered as being in the reindeer industry."

Reindeer breed about the middle of September, and as a rule produce but one calf, that in late May or early June and unlike other members of the deer family, both the male and female possess antlers which are shed annually during the months of March and

April. It is not unusual to see a spread of horns on the male reindeer of five feet from tip to tip, and in the Michigan herd today there is one magnificent bull with a spread of four feet ten inches. The average weight of the reindeer is about 250 pounds, but, as Dr.

Christiansen remarked, "we do not judge these animals by weight, but by what is termed 'Maale' from all measurements taken around the four quarters of the animal. Other terms used are 'staalpe' and 'kvart,' each having to do with measurements. A 250-

pound reindeer when

dressed will average about 190 pounds, and the fresh meat in Norway sells at the rate of two pounds for three crowns, or the equivalent at our present rate of exchange of 30 cents per pound. In Norway the cow is called "simle," the bull, "grabuk," and the calf, "calv."

#### How Reindeer Fight the Wolves

"The greatest enemy of the reindeer in our country, and you will find this true in Michigan," said Dr. Christiansen, "are the wolves. The shape of the reindeer hoof does not make it necessary for them to yard in winter like your wild deer, but they can travel all over regardless of the depth of the snow. They can range as freely in winter as they can in summer. In Norway when the Lap shepherds are tending their flocks in the mountainous country, they set up their tent near their flocks and build a big fire. If the reindeer are disturbed at night in their feeding and rest by wolves, or if they scent a wolf from afar, they immediately form a big circle with the fire in the center and keep traveling continuously around the fire until the wolves are either killed or chased off."

"On such occasions," said Dr. Christiansen, "it is impossible for the Lap caretakers or their shepherd dogs to penetrate outside of this circle. They would be crushed to death by the hundreds of moving reindeer. The shepherds therefore build platforms at the top of their tents where they climb and with their rifles frighten away the wolves."

"Oh! yes," continued Dr. Christiansen, "I have heard of your fighting deer, but let me tell you that two male reindeer during the breeding season could teach



THIS MIGHT BE A WINTER SCENE IN MICHIGAN, BUT IT JUST HAPPENS TO BE A PICTURE OF THE REINDEER COUNTRY IN NORWAY.



even your white-tail deer how to fight. They have no mercy and oftentimes they fight until death."

Dr. Christiansen stated that this is the first incident in the history of the reindeer industry where a shipment

of Vilhjalmer Stefansson, 180 died en route to their destination. This may be explained by the fact that the reindeer coming to Michigan were each crated individually, while other shipments have been made by herding in the hold of the vessel.



A MOTHER REINDEER FROM NORWAY AND HER TWO CALVES, WHICH WERE BORN IN MICHIGAN THIS SUMMER.

has been made to any foreign country from Norway that has reached its destination 100% intact. Not one reindeer that left Norway, February 14, until they reached the Mason State Game Farm, March 27, died. Out of a shipment of 700 reindeer shipped to the order

### To Be Confined On Superior Forest

Since the arrival of this herd of reindeer in Michigan, they have been confined to a 26,000 acre ranch belonging to Rasmon Hanson, of Grayling, Michigan, and lying quite close to the city of Grayling in Roscommon County. As soon as the breeding season is over these animals will be transported to the Lake Superior Forest Reserve, a tract of land bordering the north shore of Lake Superior of over 62,000 acres in extent. They will not be allowed during the coming winter season to range at will, but will be confined in an enclosure, four miles square, and be under the constant care of a Finnlander, well versed in the rearing of reindeer. The original herd of 60 was reduced by accident through shipment to 55, but was supplemented by the arrival of 26 calves in June and each one, as the photographs will show, are now quite near the size of their parents.

If the experiment of rearing reindeer in Michigan accomplishes but one thing, and that of giving to this northern country a hardy and easily handled food animal, the Department of Conservation will feel well repaid for its efforts. If, on the other hand, in years to come, the experiment should prove a failure, it will have established for all time to come the impracticability of attempting reindeer culture in the temperate zone. However, our guess is that Michigan will make good and will be the first State successfully to establish this splendid food animal in the United States.

Upon that we await results.

## FOREST POSSIBILITIES OF NORTHERN MINNESOTA

(Continued from Page 745)

Over 80 per cent of the fires occur in cut-over or burned over areas. People are more careless in these areas because they do not realize that they are dealing with stands of young trees having considerable potential value. It is the setback caused by repeated burning not the rate of growth that keeps the stands in the seedling stage perpetually. Every fire that passes over reduces the number and quality of the trees and impoverishes the soil.

It is also of interest to know how dense the stands are. The number of trees per acre influences both the amount of material produced and its character. The number per acre required for a properly stocked stand diminishes as the stand grows older. The density of stocking is generally quite satisfactory. Thirty-five per cent of the stands were found to be stocked satisfactorily, 45 per cent too lightly, and 20 percent too heavily stocked. The too heavily stocked areas are a greater problem than the lightly stocked. A too dense stand causes a slowing in

rate of growth while the slightly understocked areas eventually become fully stocked with increasing age.

Many of the stands in the seedling stage have an overstory of older trees that will soon become merchantable. These older trees are remnants left after logging, or second growth that has escaped repeated burning. This makes a very complete utilization of the soil and reduces the period during which no financial returns can be expected from these areas. This considerably counteracts the effect of the large proportion of seedling age stands.

### The Dark Cloud Has A Silver Lining

We have then discovered sufficient stock on hand with which to begin work. We are not going to be able to use the same species as originally, nor produce the same product; but that is unavoidable. Instead of large saw mills cutting pine we will have box mills, pulp mills, portable sawmills and specialty plants. We will have



more stable farming because growing timber on the timber soils will hasten and stabilize the development of the farm soils. The timber industries will create local markets and will give the pioneer farmer employment during long winter months and in lean years. We will gain stability such as we have not had. The income will be continuous. The labor will be permanent and not itinerant. There will be no boom development of towns to be left as an economic waste when the timber is cut out. All this, provided we recognize what we have and give these timber lands the measure of care and fire protection which the producing power of the soil and the present and future needs of the region warrant.

Summing it up, we find that the cut-over areas are not a barren waste, but are really producing something of both actual and potential value. The factor causing the apparently slow growth is largely repeated burning which

can and must be reduced to a minimum. Planting should be done to produce certain species and certain classes of material, but the amount needed is relatively small. Long before most of these young stands have reached a merchantable size, the depletion of timber in other parts of the country will have created a market for all raw materials we are producing. The dark cloud is not so dark after all. It has a silver lining if the people of Minnesota will but lift up their eyes and look. For in this young timber—some of it so young that the eye of the average traveler fails to catch it—there are two great things. One is the utilization of poor land which would otherwise lie idle and barren. The second is a potential harvest bringing with it permanent industries, stable employment and general prosperity. Young timber today is our wood and paper of tomorrow. Let us protect it.

## Pennsylvania Selects Forester For Governor

**G**IFFORD PINCHOT, forester, is the newly elected Governor of Pennsylvania. By an overwhelming vote the people of the State bestowed the highest office of the Commonwealth upon their former Commissioner of Forestry and thus expressed their confidence in his abilities and his high ideals of public service. At the time this issue of American Forestry went to press, unofficial returns placed Mr. Pinchot's majority at 300,000.

Mr. Pinchot's career as a conservationist and public servant is too well known to need review. Ever since he reorganized the United States Forest Service during

Roosevelt's administration and made it one of the most efficient and highly effective organizations in the government, his name has been before the public eye as an independent and fearless fighter on the side of public interests. Like all strong leaders, Mr. Pinchot has enemies, but that they are in the small minority is definitely shown by the vote given him in the recent election in his own State, where during 1920 and 1921, as Commissioner of Forestry of Pennsylvania, he reorganized the State Department of Forestry and established a record of accomplishment unparelled in the history of State forestry in America.

## Michigan's Land Survey

(Continued From Page 748)

the trading of non-agricultural land if the land owner could see the value of timber as compared to unsuccessful settlers. He would also be much more likely to enter a plan for certification and State endorsement of the agricultural land if we had a practical plan for reforesting the non-agricultural land. The importance of this phase of the land settlement policy should not be underestimated. It may be the incentive toward private reforestation which other States have lacked."

Michigan's plan sets a standard of leadership which other States may well emulate. It is sound in principle. Its success will depend upon the manner in which the survey is carried through and the information used. So

far as forest interests go, the mere designation of non-agricultural or true forest land will not suffice. The survey must point the way to the utilization of those lands for the growing of timber by adequate fire protection, fair taxation and a comprehensive State Forest policy. It must be a real economic classification of land with provisions for re-examinations from time to time of present uncertain areas in order to meet changing economic conditions. On that basis, it will stand as an enduring monument to those who conceived it and it should put forestry in proper relation with agriculture and other State interests.

## The Road To Wisconsin's Greater Outdoors

(Continued from page 733)

is quite inclusive. It is based upon consideration of things which are essential, not only in themselves, but in relation to one another. Forestry, natural parks, wild life refuges, game preserves and conservation of fishing, hunting and opportunities for recreation in the woods and on inland lakes are not separate and individual undertakings. They interlock and are an inherent part of Wisconsin's forest program. All of them, moreover, are necessary to building up the

tourist trade, which constitutes one of Wisconsin's great opportunities, and the tourist trade, in turn, is the one way to make highways which have cost huge sums pay dividends, indirect dividends of course, but nevertheless very real dividends.

In the Wisconsin program the importance of all these things is recognized, but their relative importance is carefully considered. The supreme importance of state forestry must always be before the public eye.



## OUR FOREST HUNGER

By Ovid M. Butler

An article setting forth our national appetite for wood, appearing in the January, 1923, issue of the Magazine

This will be the first of a series of special articles appearing in 1923 issues of American Forestry Magazine

Other articles of this series will be:

"The Westward Ho of Lumbering," by E. T. Allen

"The Passing of the Piney Woods," by R. D. Forbes

"The Iron Horse of the West," by Bert P. Kirkland

"The Blazed Trail of Forest Depletion," by Gifford Pinchot

"The Long Haul from the Woods," by Earl H. Clapp

"The Farm and the Forest," by Henry S. Graves

"The Land Cry Against the Forest," by P. S. Lovejoy

"Wild Followers of the Forest," by Aldo Leopold

"The Forests of the World," by Raphael Zon

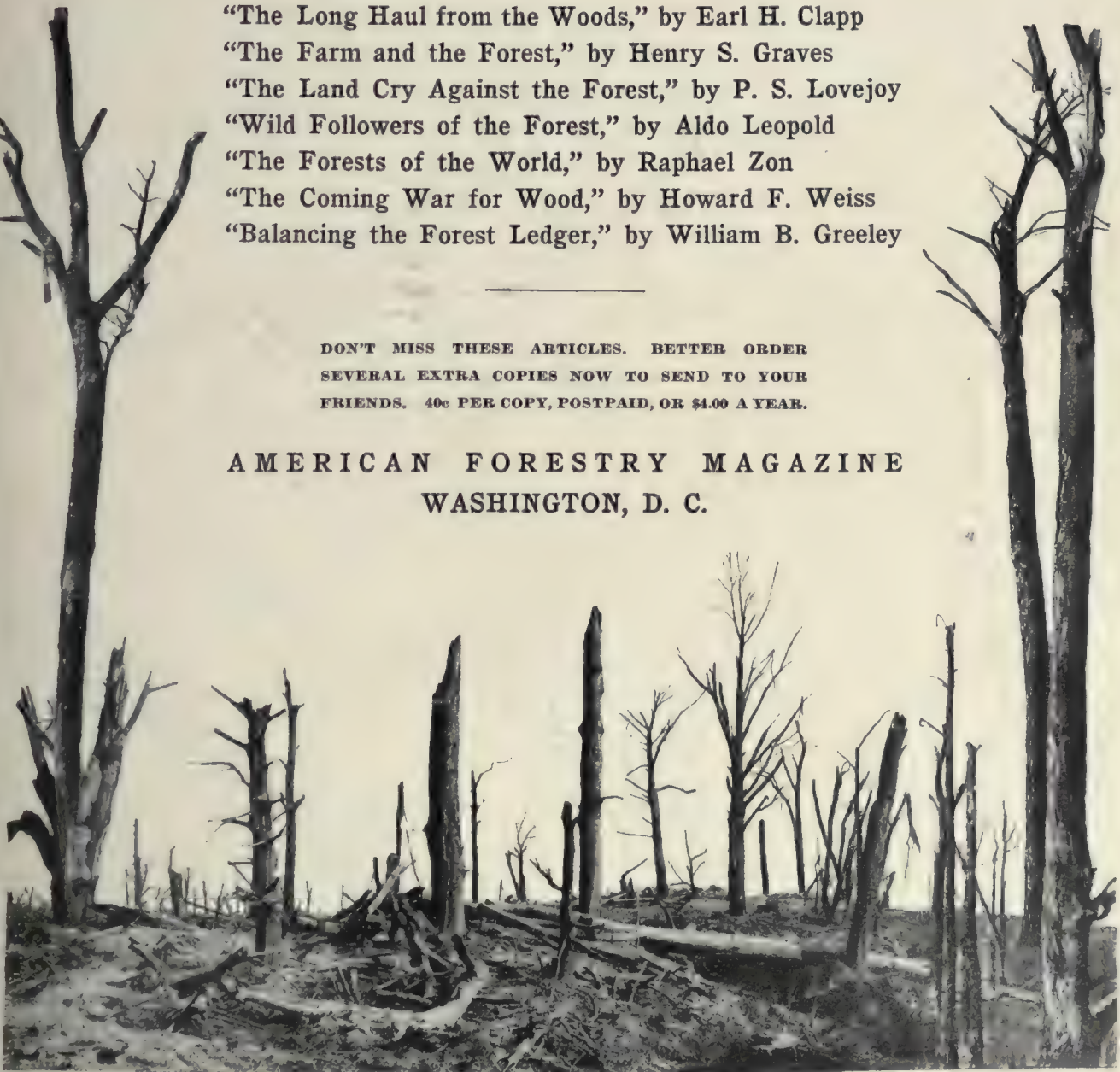
"The Coming War for Wood," by Howard F. Weiss

"Balancing the Forest Ledger," by William B. Greeley

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### DISTINGUISHING CHARACTERISTICS OF MAHOGANY

Only true mahogany from tropical America, "African mahogany," and "Philippine mahogany" are commonly sold as mahogany in this country, but at various times over 60 different species of timber have been sold under that name, says the Forest Products Laboratory. Although all of these species resemble each other in varying degrees, tropical American mahogany and "African mahogany" possess one important characteristic in common. This is the occurrence of dark amber-colored gum in many of the pores. The gum does not fill the pores, but is recognized as dark specks or streaks in the pores as seen on end or side grain. This gum is barely visible to the naked eye, but is easily seen through a hand lens with a magnification of 10-15 diameters. In preparing the end grain of the wood for examination, a very sharp knife should be used to make a smooth cut.

Some other woods have similar dark masses of gum in the pores, but none of these are commonly substituted for mahogany. Among them are crabwood and sapeli, species imported from South America in small quantities only, and the Cedrelas (Spanish cedar, etc.), which are rarely sold as mahoganies, and are easily recognized by their odor.

True mahogany has fine, continuous, concentric lines on the cross section usually from  $\frac{1}{8}$  to  $\frac{1}{2}$  inch apart, which distinguish

it from "African mahogany" in which these lines never occur.

"Philippine mahogany," although not marked by the black masses of gum, is distinguished from true mahogany and other so-called mahoganies by the presence of fine white, tangential lines  $\frac{1}{8}$  inch to several inches apart, readily visible to the naked eye, and showing under a lens as rows of small openings filled with a white substance.

A more complete key and description of mahogany and so-called mahogany, which describes common species in detail, may be obtained from the Forest Products Laboratory.

### LUMBER FOR THE MINES

The annual underground consumption of timber by the mining industry of the United States amounts to 293,365,000 cubic feet, according to an estimate just made by the Bureau of Mines. Of this amount, 151,140,000 cubic feet are used in the bituminous coal industry; 61,600,000 in the anthracite mines; 31,500,000 in iron ore mines, and 49,125,000 in mines producing other ores. The increase in the annual timber consumption in mines since 1905 amounts to nearly 46 per cent.

A serious problem now confronting the mine operator in the important coal and metal mining regions in both the East and West is the noticeable decrease in the supply and quality of the timber in many mining regions, coupled with marked increase in cost.

### LONGLEAF PINE—A PROFITABLE CROP

That there are millions of acres in the Southern States that will become valuable to the owner and the State only by the growing of pine timber is the statement made in a publication just issued by the United States Department of Agriculture, dealing with profits that may be obtained from second growth longleaf pine.

The protection and reforestation of these lands, it is pointed out, mean permanent industries, permanent homes, good roads, and good schools. Destructive lumbering and destructive fires are every year creating in the southern pine region millions of acres of waste and barren lands. In these idle timber lands is an enormous potential wealth and their productive power is not fully realized.

The bulletin explains how these idle, slacker acres can again be made productive, contributing their share toward the wealth of the community and to the pocketbook of their owner. It presents full information on the growth and value of longleaf pine, methods of producing timber and turpentine, and outlines the cutting and protection systems best adapted to this species.

Copies of the publication, which is the work of Wilbur R. Mattoon of the Forest Service, may be had free by applying to the Department of Agriculture, Washington, D. C., for Department Bulletin 1061, entitled "Longleaf Pine."

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Have you ever noticed the white, clean  
appearance of the wood used for butter  
and candy pails and for the boxes in which  
comb honey is sold? It's basswood, one of  
the few species in the world that combines  
with its white color and light weight the  
qualities of being odorless and tasteless.

Over 525 unique uses for which bass-  
wood is highly prized are enumerated in  
Department Bulletin 1007, Utilization of  
Basswood, a professional paper just issued  
by the United States Department of Agri-  
culture and written by Warren D. Brush  
of the Forest Service.

Basswood is used for agricultural imple-  
ments, shoe trees and lasts, boxes and  
crates, caskets, barrel staves, excelsior, fur-  
niture, handles for tools, interior finish,  
musical instruments, kitchen woodenware,  
laundry appliances, refrigerators, bobbins  
and spools, toys, trunks, veneer, pulpwood,  
and lumber.

In New York, Pennsylvania, and Ohio,  
where basswood was formerly abundant,  
the supply is now very scarce due to the  
heavy demands of local wood-working in-  
dustries. The Great Lakes and Southern  
Appalachian regions are now the main  
sources of supply. Wisconsin and Michi-  
gan have furnished the largest quantities  
for the last 20 years. During the last 12  
years the quantity used has diminished  
nearly 50 per cent and it's yearly consump-  
tion does not exceed 250,000,000 board feet.

The total available stand is estimated at  
90,000,000,000 board feet.

In addition to discussing the various  
uses of the wood, the bulletin treats of its  
distribution, properties, and marketing.  
Copies of the publication may be had free  
upon application to the, United States De-  
partment of Agriculture, Washington, D. C.

### SUMMARIZES FORESTRY LAWS

Numerous states are now turning out  
forestry legislation so rapidly that it is  
impossible for the public to keep pace with  
the work along this line, says the Forest  
Service, United States Department of Agri-  
culture.

In addition to covering new ground, the  
states are effecting radical and far-reaching  
changes in former laws, and the need for  
a handbook on this subject is making itself  
felt in the form of requests for informa-  
tion. Such a handbook has just been issued  
by the Forest Service entitled "State For-  
estry Laws of 1921." It is arranged as a  
ready reference manual for the use both  
of the general public and of the many in-  
dustries that are vitally interested in exist-  
ing forestry laws.

This publication, states the Forest  
Service, will serve the public in gathering  
up the sum and substance of recent legis-  
lation and measuring it against certain  
basic principles which are becoming more  
and more generally recognized as essential  
to such legislation.

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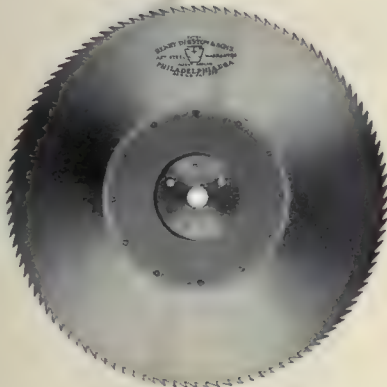
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### IDAHO SCHOOL OF FORESTRY STARTS PROSPEROUS YEAR

With the curricula well rounded and stabilized, a larger enrollment than ever before and no changes in the faculty, the Idaho School of Forestry has commenced what promises to be the most prosperous year of its existence. The enrollment to date totals 67 resident students divided among the classes as follows: Seniors, 7; Juniors, 7; Sophomore, 13; Freshmen, 25, and unclassified (Federal Vocational and Ranger Course), 15. This enrollment is particularly encouraging because of the increase in the proportion of the men registered in the regular four-year curricula as compared to previous years.

#### The Ranger Course

The ranger course, as announced last spring, now covers only one year of 8 months' resident work, with the course divided into three terms. The course opened on October 16 and the work will end at the close of the college year, June 10. The second term covers the 12 weeks' period from January 3 to March 23, and the courses given in this term are arranged to constitute an independent unit, so that those desiring a shorter course may get a well-rounded body of work by registering for the second term only.

#### The Associated Foresters

The Associated Foresters, which is the title of the Forest Club, are planning to

make this year one of much activity and value to the members. Committees are already at work maturing plans to make the special events of the year better than ever. The officers of the club for the year are: President, Arthur M. Sowder, '24; Vice-President, Russell M. Parsons, '23; Secretary-Treasurer, Leslie E. Eddy, '24.

#### School Forest Seems Assured.

One of the first meetings of the year was addressed by Dean F. G. Miller, who outlined the prospects for the School of Forestry. He showed how in every way the school was in a better position for giving high-class instruction and rendering valuable service to the state than ever before and stated that negotiations were under way which practically assure the school of more than a section of forest land readily accessible from Moscow, for demonstration, instruction and investigative purposes. The land under advisement is cut-over and for the most part is well stocked with thrifty second growth yellow pine and red fir, up to 40 years in age, thus affording ample opportunity for instruction and experiment in planting, thinning, silviculture, mensuration, etc.

#### Students Hear District Forester

On October 20, District Forester Fred Morrell, of Missoula, Montana, addressed the student body of the School of Forestry at a special meeting. He spoke of the development of policies in the U. S. Forest

Service and gave his audience a forcible picture of the depth and magnitude of the problems with which the Forest Service has to deal.

#### Dr. Schmitz Addresses Lumbermen

Dr. Henry Schmitz, Associate Professor of Forest Products, was called upon by the North Idaho Forestry Association to present a paper upon the Pine Butterfly, the insect which was so abundant throughout the state this summer, at the regular meeting in Spokane during September. Dr. Schmitz minimized the seriousness of the butterfly epidemic, basing his optimistic view upon previous outbreaks of the pest and the character of the damage done to the trees.

#### Xi Sigma Pi Scholarship Roll

The hall of the School of Forestry now displays a scholarship roll, upon which will be entered each year, the name of the student in each class who attained the highest scholarship for the year. This roll is in the form of a well-designed bronze tablet and was presented to the school by the local chapter of Xi Sigma Pi, the National Forestry Honorary Society.

#### Philippine Wood Specimens on Display

The School of Forestry has recently acquired through the courtesy of the Bureau of Forestry of the Philippine Islands, a complete, well labeled set of specimens of the various native Philippine woods. Arrangements have also been made to secure



a collection of native woods from Java, in line with the effort to improve the equipment of the school in every way possible.

#### Forestry Exhibit at State Fair

A very interesting and striking display of publicity material was sent by the Idaho School of Forestry to the State Fair at Boise, and to the State Convention of the Federation of Women's Clubs at Burley during October. The display consisted of a collection of unusual products made from wood such as fine socks, absorbent cotton, clothes line, etc.; another collection and diagram showing the great variety of the chemical products derived from wood; a large chart in the form of a tree, showing the activities of the Forest School and the opportunities open to trained foresters; a set of the publications of the School of Forestry; a wonderful assortment of photographs of the white pine forests of the state and a chart showing the importance of the forest industries to the state and the necessity of protecting the forests from fire.

#### Practical Fire Fighting

Late in September the School of Forestry was given an opportunity to prove its practical usefulness to the local community by taking charge of a large forest fire, burning on Moscow Mountain, and threatening to destroy several summer homes as well as reduce the recreational and scenic value of the mountains. This area lies entirely outside the jurisdiction of the protective associations and so there is no

organization to take care of fires which may occur. The persons, whose property was threatened, called upon the School of Forestry for aid and Prof. C. E. Behre undertook the direction of the work, aided by students of the Forest School. The Moscow Chamber of Commerce provided transportation and food and enlisted the services of volunteer fire fighters. It took five days and a light rain to put the fire under control with the burned area estimated at 1,000 acres. The city of Moscow and the Idaho School of Forestry feel, however, that a very creditable piece of work was accomplished in handling successfully a fire of this size entirely with volunteer help.

#### DEMAND FOR PENNSYLVANIA TREES

Applications for trees for the spring planting season now coming into the Department of Forestry indicate that the movement for the reforestation of waste and denuded lands in Pennsylvania is growing steadily.

Each succeeding year it is brought home to the people of the State, as well as all the country at large, with increasing force that the only hope of a timber supply in the future lies in new forests, produced either artificially or naturally.

In order to make forests more attractive as an investment, the State is spending large sums to protect them from fire.

To date the number of applications for

young forest trees is far more than for the corresponding period last year. Land owners in all parts of the State have applied for trees in such large quantities that the entire supply, about 4,000,000 trees, of white pine, Norway spruce, Japanese red pine, European larch, red oak, catalpa and black walnut has been allotted.

The Department of Forestry has, however, about 3,000,000 young trees of the following kinds available: Pitch pine, Scotch pine, Japanese black pine, white ash, green ash, rock oak and American elm.

These trees are from five to twelve inches in height. They are distributed free to land-owners by the Department of Forestry, and they are to be planted for wood production. They are not suited in size and shape for shade or ornamental planting.

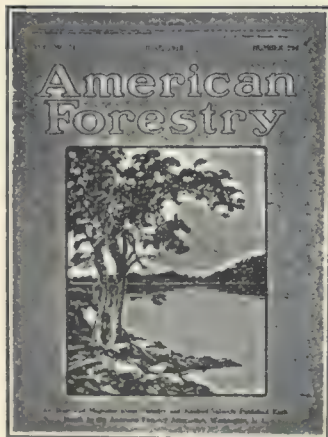
In addition to applications from individuals requests for trees have been received from cities for municipal parks and for watershed reforestation. More applications have come from sportsmen's clubs than ever before, indicating a wider interest among outing organizations in co-operating to protect and preserve the natural resources of the State.

Water companies and coal mining companies are prominent among the applicants. The former are planting to conserve their water supplies, and the mining companies are planting their surface lands to provide a future supply of timber for their operations.

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## BARKBEETLES MENACE FORESTS

Ravages of the barkbeetle which threaten the destruction of the yellow pine forests about the Grand Canyon have been temporarily checked, announces the Forest Service, United States Department of Agriculture.

Two thousand trees within the Grand Canyon National Park and nearly 4,000 on the Kaibab National Forest have been felled and peeled as a preventive measure against the spread of this destructive insect.

At the request of the National Park Service and the Forest Service, field agents were sent by the Bureau of Entomology last summer to examine large patches of "red-top" trees on both sides of the Grand Canyon Highway running north from the park through the Kaibab National Forest.

They reported that the trees were infested with the Black Hills barkbeetle and advised that immediate measures be taken to cut the required percentage of infested trees and peel the bark in order to destroy a sufficient amount of the eggs and larvæ of the insect which are found between the inner and outer bark to stop the depredation.

A total of \$9,000 was spent in cutting 6,000 of the larger and more heavily infested trees.

It is estimated that by this method between 50 and 60 per cent of the insects were killed within the patches thus treated, but a much smaller percentage of the total infestation, so that an equal amount must be spent next spring in order to prevent effectively further depredations.



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## Bryant's Logging

The Principles and General Methods of Operation in the United States. By Ralph Clement Bryant, F.E., M.A., Manufacturers' Association, Professor of Lumbering, Yale University, 590 pages, 6 by 9. 133 figures. Cloth—net, \$4.50

A discussion at length of the chief facilities and methods for the movement of the timber from stump to manufacturing plant, especially logging railroads.

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## BOOK REVIEWS

*Field Manual of Trees*—John H. Schaffner (Adams) Columbus. \$1.25.

This book is a revision of the author's former *Trees of Ohio and Surrounding Territory* and carries out more definitely the idea of having a convenient guide by which it is possible to study our trees at any season of the year. The keys to identification are complete and elaborate technical descriptions have been eliminated for brief notes covering necessary points are included for each species. Most of our common, cultivated, exotic trees are included since these form an integral part of the landscape and in some places more conspicuously than the native species. With the aid of this *Manual* the study of trees may be made a pleasant and profitable pastime at any season of the year.

*Lumber—Its Manufacture and Distribution*—Ralph Clement Bryant (Wiley) New York. \$4.50.

A textbook for forest schools and a valuable reference book for those who desire a sound, general knowledge of the lumber industry. This is the only textbook on lumber manufacture and distribution now available in any language. While it is primarily a textbook for forest schools, and will be of value to those who desire a general knowledge of the lumber industry, it presents in book form, for the first time, a complete but concise discussion of the various phases of lumber manufacture in the United States.

The subject matter is divided into three parts, the first dealing with plant location and the standard types of equipment used in the manufacture of lumber, with methods of handling at sawmill plants. The second part treats primarily of the technique of the industry, including the methods of lumber manufacture, seasoning, etc., and the third part treats very fully the economic problems of lumber distribution.

A copy of *Trees of New York State, Native and Naturalized*, has been sent the editor and accepted as a most valuable contribution to the library of the Association. Written by Dr. H. P. Brown, of the faculty and issued by the New York State College of Forestry for the purpose of giving "information regarding the forest resources of the state, chief among which are its trees" this book is sure to have an eager and appreciative reading.

*Impressions of European Forestry*—Ralph S. Hosmer, Cornell University. \$1.00.

An interesting and informative book, describing in non-technical language, what European countries are doing in forestry. This book is a compilation of a series of

letters, which Prof. Hosmer wrote to the editor of *The Lumber World Review* during a six months' trip through Great Britain, Norway, Sweden, Denmark, Germany and France in 1921. The author in his "Foreword" makes no pretensions to having covered comprehensively the forest work of the countries visited, but states that his object was "to present in a non-technical way the personal reaction of one American forester to certain European forest practices."

Mr. Hosmer's book is a valuable contribution to American forestry literature. Because of the popular and interesting style in which it is written, it will serve to give the layman as well as the forest student a clearer conception of what these European countries are doing in forestry.



**ALBINO DEER**

Deep down in the heart of every hunter who has heard of or seen a white deer (an albino of the red species) is the hope that he may get one of these beautiful creatures. Eli Rand, of Ladysmith, Wisconsin, has been lucky enough to shoot such a deer. It is perfectly white with the exception of a few small mottled marks on its ears and back of its neck. This deer was with three others, one of which had white legs. The iris of its eyes are pure white. The Indians have always regarded the albino as sacred among animals. The intense glow of the white fur of this animal has caused a halo to appear above its body in the photograph.—H. E. Zimmerman.



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